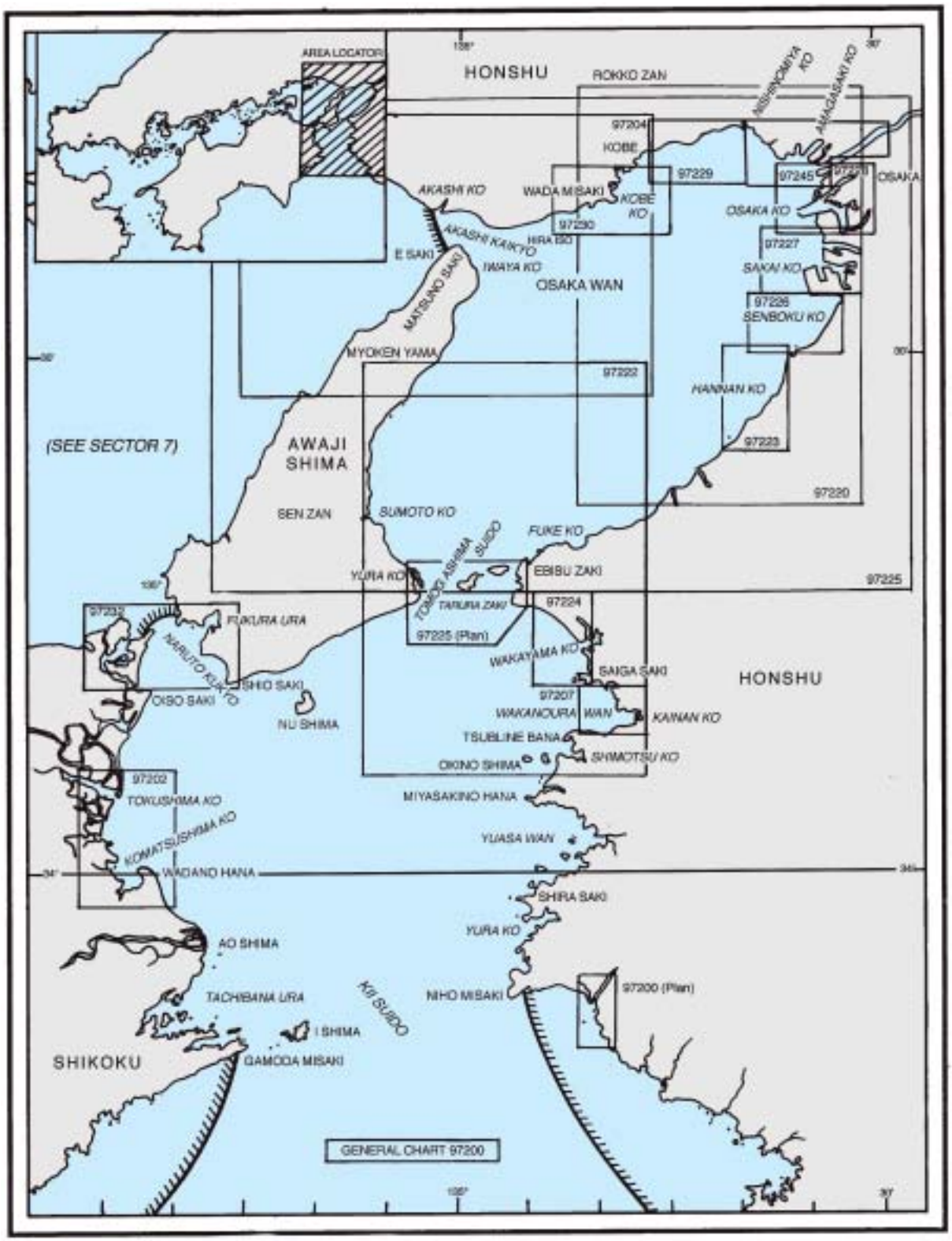
Click on "See Sector" to be hotlinked to that Sector.



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 6

KII SUIDO, THE NAIKAI (INLAND SEA), AND OSAKA WAN

Plan.—This sector first describes Kii Suido, the E entrance of the Naikai and its adjacent coasts, including the important ports of Wakayama and Shimotsu. Osaka Wan is then described, including the important ports of Osaka and Kobe, followed by Akashi Kaikyo.

General Remarks

6.1 The Naikai (Inland Sea) is bordered N and E by the islands of Honshu and S by the islands of Shikoku and Kyushu. It is connected to the Pacific Ocean by Kii Suido and Bungo Suido, which lie E and W, respectively, of Shikoku; it is connected to the Sea of Japan by Kanmon Kaikyo.

The Naikai extends about 240 miles from E to W and about 10 to 30 miles from N to S. There are about 3,000 islands and islets in the Naikai, and they are more numerous on the N side. The Naikai is famous for its scenery and abundance of historical landmarks; the greater part of it has been designated a national park.

The seas in the Naikai are generally calm; there is no particular difficulty in navigation in the fairways established under the Maritime Traffic Safety Law or along the recommended charted routes, even at night. However, there are many places where the channels are narrow, the tidal currents are strong, and there is heavy traffic of all types and sizes of vessels. Very large vessels and tugs with long tows may also be met, and there are places where fishing vessels congregate in certain seasons of the year. Vessels should navigate with caution to avoid collision.

Certain charts of the Naikai indicate Japanese swept areas as being safe from mines for shipping on a "risk acceptable" basis.

The boundary line between the Naikai and other sea areas is, as follows:

1. A line between **Hino Misaki Light** (33˚52'42"N., 135˚03'50"E.) and **Gamoda Misaki Light** (33˚49'50"N., 134˚45'08"E.).
2. A line between **Sado Misaki Light** (33˚20'24"N., 132˚01'E.) and **Jizo Misaki Light** (33˚15'48"N., 131˚54'20"E.).
3. A line between Daiba Hana on **Takenoko Shima** (33˚56'50"N., 130˚52'27"E.) and **Wakamatu Dokai Wan Entrance Breakwater Light** (33˚56'17"N., 130˚51'11"E.).

The Maritime Traffic Law has been established in the Naikai (Inland Sea) and other Japanese areas to increase the safety of traffic in congested areas by prescribing special regulations and by enforcing the use of certain traffic routes. Almost all the sea areas of the Naikai, except for the harbor areas, are subject to this law. See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia. The compulsory traffic routes are charted, and special regulations pertaining to each route are described in the appropriate sectors of this publication.

Pilotage.—There are currently four compulsory pilotage districts in Seto Naikai, as follows:

1. The Komatsushima area.
2. The Kobe Ko district.
3. The Naikai area, encompassing most of the inland sea, except Kii Suido, the approaches to Kanmon Kaikyo and Kanmon Ko, and Bungo Suido.
4. The Osaka Wan district, including Tomogasima Suido and Akashi Kaikyo.

Pilotage is compulsory in Kobe Ko and Kanmon Ko; however, in Kanmon Ko this applies only to the harbor areas outside the fairways and the channels through Kanmon Kaikyo.

Foreign vessels intending to proceed through Bisan Seto East Fairway, Bisan Seto North Fairway, Bisan Seto South Fairway, Uko East Fairway, Uko West Fairway, Mizushima Fairway, and Kuroshima Kaikyo Fairway, which are designated by Maritime Traffic Safety Law, and specified vessels such as those loaded with liquified gas, etc., are requested by the Maritime Safety Agency (MSA) headquarters of the district concerned to embark a pilot.

Pilots are available 24 hours in the Naikai. Pilots board, as follows:

1. Vessels entering through Kii Suido are boarded in the vicinity of **Wada Misaki Quarantine Anchorage** (34˚38'N., 135˚11'E.). Wada Misaki Signal Station is reported no longer in use. The station had displayed anchoring and berthing signals.

   Pilots will board very large vessels, which are proceeding direct to various harbors in the Naikai from Tomagashima Suido, in the area bearing 203˚, distant 5 miles from **Kobe Light** (34˚39'N., 135˚10'E.). Pilots will disembark from very large vessels proceeding direct to Tomagashima Suido from various harbors in the Naikai, in the area bearing 213˚, distant 5.5 miles from Kobe Light.
2. Vessels entering through Bungo Suido are boarded about 3 miles SSE of **Seki Saki Light** (33˚16'N., 131˚54'E.); vessels 200m in length or over are boaded 4 miles SE of the light. With strong NW winds and seas in winter, vessels should proceed, if possible, to a sheltered area S of Tsuta Shima and wait for the pilot.
3. Vessels entering through Kanmon Kaikyo board about 0.5 mile E of **Matsure Shima Light** (33˚58'N., 130˚52'E.), or in the vicinity of **He Saki Quarantine Anchorage** (33˚57'N., 131˚02'E.).
4. Vessels from Kobe or Osaka board the pilot 1 mile SE of Kobe Light, for vessels under 200m in length, or 4 miles SSW of Kobe Light, for vessels over 200m in length.

Requests for a pilot should be made by radio or radiotelephone 24 hours before ETA to the appropriate pilot headquarters or through the vessel's agent. Confirmation of time of arrival should be made 6 hours before ETA; any change in ETA should be made at this time.

When vessels equipped with radiotelephone come within range of Kobe Port Radio Station, Shimonoseki Port Radio Station, or Oita Port Radio Stations, they should immediately

Table of Contents

send a message confirming their ETA, and then keep a watch on VHF channel 16.

Vessels nearing the pilot station should hoist International Code flag G by day, and flash the Morse letter G continuously at night. In poor visibility, vessels should sound the Morse letter G by sound signal continuously.

For further information regarding pilotage in Tomogashima Suido, see paragraph 6.15.

Kii Suido

6.2 Kii Suido, the E entrance to the Naikai, is entered between **Hino Misaki** (33˚53'N., 135˚04'E.) and Gamoda Misaki, about 16 miles WSW.

A voluntary traffic separation scheme has been established in Kii Suido, in the vicinity of Hino Misaki and I Shima. See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for further information.

The principal channel into Osaka Wan through the NE part of Kii Suido is Yuro Seto in Tomogashima Suido. Naruto Kaikyo, in the NW part of Kii Suido, leads into Harima Nada, and is better avoided by large vessels and vessels without local knowledge; Naruto Kaikyo has very strong tidal currents, is narrow, and has many reefs.

Caution.—A wreck is reported in position 33˚52'52"N, 134˚51'51"E, approximately 3 miles NE of the N tip of I Shima, in close proximity of the voluntary traffic separation scheme.

A submarine power cable laid between Tachibana and Shira Saki, whose position is best seen on chart, may cause local magnetic compass anomalies.

Kii Suido—East Side

6.3 Hino Misaki, a steep, cliffy headland, is marked by a light and ramark. Hino Yama, 202m high, is conspicuous nearly 0.5 mile NE of Hino Misaki. Okura Baye, 19.8m high, about 0.1 mile W of the cape, is the outermost of the many above-water rocks fringing the cape; a rock, with a depth of 1m, lies about 45m farther W. Kajitori Sho, which dries 0.6m, lies about 0.2 mile offshore, nearly 0.5 mile NNW of the cape.

Hasedeno Hana (33˚54'N., 135˚04'E.), about 1.5 miles N of Hino Misaki, rises to a pointed hill, 101m high.

Hii Wan is entered between Hasedeno Hano and Oura Saki, about 1.3 miles NNE. Naka, a group of rocks, lies in the central part of the bay; a light is shown from the highest rock. At the inner end of the bay are three coves, which provide anchorage for small vessels with local knowledge. Anchorage cannot be taken during strong W winds when seas enter the bay.

Oura Saki is a low, flat, cliffy projection. **Ichinoe Bae** (33˚56'N., 135˚04'E.), 5.2m high and marked by a light, is the outermost above-water rock on a shoal spit extending about 0.4 mile NW of a point, about 0.4 mile NE of Oura Saki.

Yura Ko (33˚57'N., 135˚06'E.) is entered between Ichinoe Bae and Shimoyama Hana, about 1.5 miles NNE. Hijiki Shima, 35m high, lies about 0.3 mile W of Shimoyama Hana, and Kasane Yama, a rounded hill, 263m high, and surmounted by a radio tower, is conspicuous about 1 mile E of the same point. Ari Shima, 72m high, lies in the entrance to the inlet; the islet is bordered by rocks, and a 3.6m depth lies about 0.2 mile E of it. A fish haven is situated 0.5 mile W of Ari Shima in the approaches to Yura Ko.

Hino Misaki Light

Pilotage.—The berthing master meets vessels off Arima Shima. Berthing is carried out day and night.

Anchorage.—Anchorage can be taken, in 11m, mud, good holding ground, about 0.2 mile W of the head of the jetty, sheltered from all but SW winds.

Directions.—The harbor is normally entered S of Ari Shima. Lights, in line bearing 097˚, about 0.5 mile SE of Ari Shima Light, and lights, in line bearing 041˚, about 1.3 miles ENE of Ari Shima Light, lead into the harbor. A mid-channel course then leads to the inner harbor.

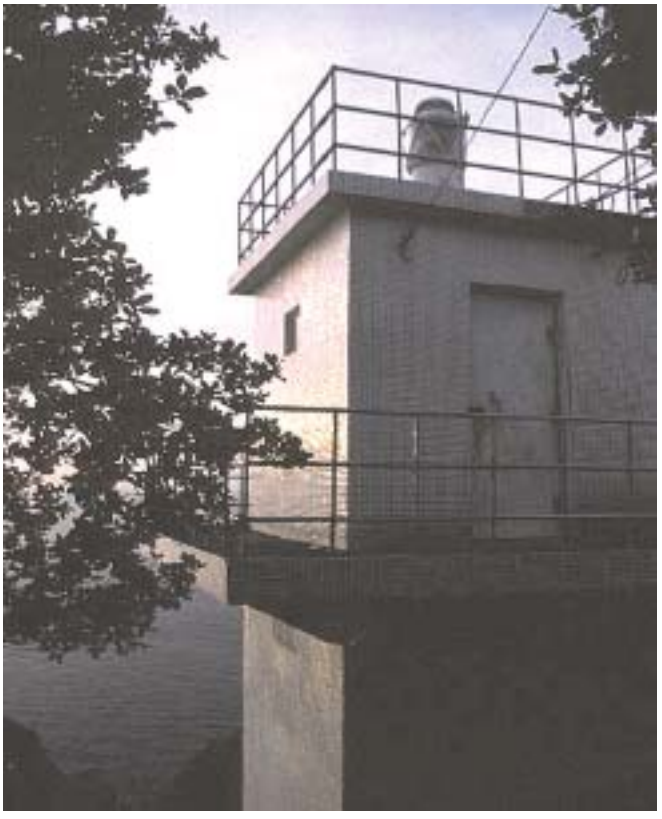
6.4 **Shira Saki** (33˚58'N., 135˚04'E.), rising to an elevation of 57m, is a whitish gray cliff. It is prominent and rises gradually to Kuro Yama, 254m high, about 1.5 miles E.

Ashika Shima, 4.8m high, steep-to on its W side, and usually marked by breakers, lies about 0.4 mile W of Shira Saki. A light is shown from a round concrete tower standing on the rock. Okura Bae, a black rock, 7.5m high, lies about 0.2 mile N of Shira Saki, with other rocks between.

Yuasa Wan is entered between Shira Saki and Miyasakino Hana, about 6 miles N. The latter point is steep and covered with pine trees; a light is shown from the point, and pine trees are conspicuous on a hill, 90m high, about 0.4 mile SE of the point. A measured distance of about 2,118m lies to the W of Miyasakino Hana and is indicated by the light structure and three beacons. Ogono Se, with a depth of 3.1m, and steep-to, lies about 0.4 mile S of Miyasakino Hana. There are several islets and numerous fish havens in Yuasa Wan. Yuasahiro Ko lies at the head of the bay.

Oba Se, a rock with a depth of 0.3m, and Sono Se, a rock, with a depth of 7.3m, lie in the central part of the bay, about 1.5 miles NW and 0.8 mile NW, respectively, of the W extremity of **Taka Shima** (34˚01'N., 135˚07'E.). Karumo-jima, about 1 mile NNE of Taka Shima, has above-water rocks extending

Return to paragraph: 6.5



Miyasakino Hana Light

about 0.2 mile N of the W islet. Kenashi To, two steep-to brown rocks, 21m high, lie about 0.5 mile ENE of Karumo-jima. Sogami Se, a rock awash, lies about 1.3 miles NW of Kenashi To.

Anchorage.—Good anchorage, sheltered from all but W winds, can be taken, in 11.9 to 14.9m, mud, SE of Kenashi To, in the outer part of Yuasahiro Ko.

Temporary anchorage can be taken by small vessels of 500 grt off a bight on the SE side of Taka Shima, in depths of 11.9 to 14.9m, mud, good holding ground. Care must be taken to avoid the reefs about 0.2 mile SSE of Taka Shima, and the seas become heavy with strong S to NW winds.

Wakayama-Shimotsu Ko (34˚12'N., 135˚08'E.)

World Port Index No. 61542, 61543, and 61545

6.5 Wakayama-Shimotsu Ko occupies the N part of the E side of Kii Suido, and extends between **Miyasakino Hana** (34˚05'N., 135˚05'E.) and Takura Saki, about 11.5 miles N. The harbor is divided from the S to N into the harbor areas of Arida Ku, Shimotsu Ku, Kainan Ku, and Wakayama Ku. The three cities of Arida, Kainan and Wakayama and the town of Shimotsu lie on its shores.

Arida Ku and Shimotsu Ku are petro-chemical factory zones with large refineries in the area. An industrial area has been constructed in Kainan-Ku, in the SE part of Wakanoura Wan. Wakayama Ku is further divided into Minami Ku (South District) and Kita Ku (North District), located S and N, respectively, of the mouth of Kina Kawa.

Winds—Weather

In winter, the swell enters all the harbor areas when strong monsoon winds are blowing. Shimotsu Ku is well-sheltered from S winds, but tankers berthed at Toa Fuel Jetty E-1, on the S side of the harbor, must beware of SE gusts blowing down from the mountains behind. Caution is advised in Minami Ku (South District) of Wakayama Ku, when strong SW to WNW winds and seas cause heavy seas to enter the harbor.

When the center of a typhoon passes W of the harbor, S to SW winds are strong, and caution is also necessary with regard to W winds after passage of the typhoon. In a typhoon it is recommended locally that large vessels in Arida Ku, Shimotso Ku, and Kainan Ku should seek shelter in Wakanoura Wan, and large vessels in Wakayama Ku should seek shelter off Kishi-wada (Hannon Ko) in Osaka Wan; small vessels should seek shelter inside each harbor area.

Tides—Currents

The tidal rise at Wakayama is 1.8m at MHWS, and 1.4m at MHWN.

The tidal currents flow N and S, but have virtually no effect on shipping. However, in the vicinity of the quarantine anchorage (34˚07'N., 135˚07'E.), at the time of HW and LW, respectively, at Shimotsu, the N current and the S current are at their strongest, with a velocity of about 0.8 knots.

Depths—Limitations

Jino Shima (34˚07'N., 135˚06'E.) is bordered by rocks and shoals extending about 0.1 mile offshore. Fish havens exist off the S coast of the island. Nabe Iso, with a depth of 0.9m and marked SW by a lighted buoy, lies about 0.3 mile S of Jino Shima, with depths of less than 10.1m extending about 0.2 mile N. Kenashi Ishi, a rock, 11m high, lies near the coast, about 0.5 mile SSE of Jino Shima; a 4.3m depth lies about 0.1 mile W of the rock.

The channel through the area between Jino Shima and the mainland is marked by lighted buoys. A submarine water pipeline is reported to extend 100m WNW from the shore on the E side of the channel; its seaward end is marked by a lighted buoy.

Toa Fuel Jetty O-1 is on the coast E of Jino Shima. The berth can be used by tankers up to 236,000 dwt, with a draft of 18.5m. There is a submersible oil boom at the berth. Lights are shown at the pierhead and approximately 0.2 mile N and S of it. The berth is equipped with dolphins, oil fencing, and moor-ing buoys.

Osaki Sea Berth, close N of Tsubune Hana, has depths of 24 to 25m, and can accommodate tankers up to 130,000 dwt. A submarine pipeline extends from the berth to Tsubune Hana; a submarine power cable is laid between the dolphins at either end of the berth.

Toa Fuel Jetty E-1, on the S side of Shimotsu Ku, has depths of 13.5m alongside, and can accommodate tankers up to 70,000 dwt.

Table of Contents

Kainan Ku, a channel dredged to 12m, leads to the SE corner of Wakanoura Wan; the channel is marked by lighted buoys.

An overhead cable, with a vertical clearance of about 47m, spans the entrance to Kainan Ku.

A prohibited entry area exists to the N of the buoyed channel. A lighted buoy marks the seaward end of a submarine water pipeline in the N part of this area.

A jetty at the head of the harbor has depths of 13m alongside, and can accommodate tankers up to 78,000 dwt. A pier, on the N side of the harbor, has a berth with depths of 11 to 12m alongside, with a length of 360m; it can accommodate vessels up to 20,000 dwt.

Overhead power cables, with vertical clearances of 28m and 24m, respectively, span the basins at the E end and SE ends of the harbor. Another overhead power cable, with a vertical clearance of 40m, crosses the channel leading N in the E part of the harbor.

Wakayama Ku (Minami Ku), the area enclosed by breakwaters close S of the mouth of Kino Kawa, has depths of 8.5 to 9.5m alongside the N side of the base of the S breakwater; it can accommodate vessels up to 15,000 dwt and has a berthing length of 370m.

There are depths of 9.8 to 10.1m alongside the S side of the base of the S breakwater.

Kita Ku harbor, two dolphin berths on the inner side of the W breakwater, have depths of 11.9m alongside and can accommodate vessels up to 20,000 dwt; the SE berth is for LPG vessels only.

Berth B, on the NE side of the main harbor, can accommodate vessels up to 90,000 dwt in 9.5 to 14m; Berth C can accommodate 70,000 grt vessels in 14m of water.

Aspect

Miyasakino Hana (34˚04'N., 135˚05'E.) was previously described with Yuasa Wan in paragraph 6.4. Okino Shima, about 2.3 miles farther N, is 92m high, and marked by a light in its W part.

Jino Shima, about 1 mile E of Okino Shima, rises to an elevation of 115m near its SW end and has a high cliff on its W side. Oil tanks, painted silver, are conspicuous on the mainland E and SE of Jino Shima.

A large chimney, 161m high, painted red and white and emitting flames, is conspicuous about 0.8 mile SE of the N end of Jino Shima; a three-stack chimney, 135m high, with its upper part painted black and its lower part silver, is conspicuous about 0.3 mile farther S.

Fuki Kosan Refinery, in which there are a number of chimneys and oil tanks, lies at the inner end of the harbor.

A channel, marked by lighted and unlighted buoys, leads between Jino Shima and the mainland.

Tsubune Hana, at the N entrance to Shimotsu Ku, is marked by a light. Several oil tanks, 25m high, and painted white, are conspicuous on the NE side of the headland.

Saika Saki (34˚11'N., 135˚09'E.), the N entrance point of Wakanoura Wan, is a steep, cliffy headland, marked by a light. Close W, there are four islets, including O Shima, 34m high.

Wakayama Castle, with its keep on the summit of a 40m hill, is conspicuous nearly 3 miles NE of Saika Saki, in the city of Wakayama.

Saika Saki Light

Takura Saki Light

A power station chimney is conspicuous about 0.5 mile N of the head of Kita Ku North Breakwater; the three-stack composite chimney is 80m high and painted red and white.

Takura Saki (34˚16'N., 135˚04'E.) rises to an elevation of 41m and is marked by a light. Hachimaki Yama rises to an elevation of 131m, about 0.5 mile ENE of the headland.

Pilotage

Pilotage is not compulsory. Pilots, when requested, normally board in the Quarantine Anchorage NE of Jino Shima, but for vessels entering harbor without need for quarantine, the pilots will board W of the harbor area in which the vessel is to be berthed. See paragraph 6.1 for further information.

However, vessels berthing at Toa Fuel Jetty O-1 or at Osaki Sea Berth, will board the pilot in the Quarantine Anchorage or in the sea area N of these berths; large vessels over 10,000 dwt will be boarded in an anchorage specified by the harbormaster. The harbormaster's office, at the head of Shimotsu Ku, can be contacted by radiotelephone.

Anchorage

Wakanoura Wan provides anchorage, in 4.9 to 20m, soft mud, good holding ground, except during strong winds between the S and W, which send in a heavy sea.

The quarantine anchorage lies NE of Jino Shima.

Directions

Fairways Shimotsu Fairway, which leads into Shimotsu Ku, is entered about 0.4 mile SSW of Tsubune Hana; the fairway is 0.1 mile wide and about 1.1 miles long, oriented on a heading of 123˚.

Kita Ku Fairway, which leads into Wakayama Ku (Kita Ku), is about 0.2 mile wide and marked by lights and lighted buoys. Reclaimed land extends W on the seaward side of the former S breakwater and forms the S side of Kita Ku Fairway.

Passage in depths of over 10.1m can be made S of Jino Shima, but the least navigable width is about 250m. Care is necessary to clear Nabe Iso and the depth of less than 10.1m extending N.

Vessels entering Shimotsu Ku should steer for the entrance to Shimotsu Fairway on a course of 100˚ from a position about 1 mile N of **Shimotsu Ko Light** (34˚07'N., 135˚05'E.) on Okino Shima.

After entering the fairway, alter course to 123˚, steering for the summit of Sotose Yama, 43m high, located about 0.3 mile WNW of the harbormaster's office. Caution is necessary due to vessels at anchor in the quarantine anchorage, which lies about 0.5 mile W of the fairway entrance.

Vessels proceeding to Wakayama Ku (Kita Ku) from the S should steer for Takura Saki Light; when W of Kita Ku Fairway, alter course as necessary for the passage.

Vessels from the N should steer for the entrance to Kita Ku Fairway from a position about 1.5 miles SW of Takura Saki Light. Caution is necessary when entering and leaving the harbor, as there are a large number of fishing boats in the harbor.

Caution

Shimotsu Ku Kajitori Ne, a rock with a depth of 1.2m and marked by a buoy, lies about 0.2 mile SSE of **Tsubune Hana** (34˚08'N., 135˚08'E.), on the N side of the entrance to Shimotsu Ku.

Kii Suido—West Side

6.6 **Gamoda Misaki** (33˚50'N., 134˚45'E.), the E extremity of Shikoku, terminates in steep, dark brown cliffs, and is marked by a light. I Shima, about 3 miles ENE of Gamoda Misaki, rises to an elevation of 134m to the tops of the trees at its N end; Toni Yama, a hill, 129m high, lies in the S part of the island, and is marked by a light on its summit.

Two islets lie on the W side of I Shima. Between these islets and Gamoda Misaki there are many groups of rocks, some above-water. Navigation in this area should not be attempted without local knowledge. Sirika Bae, a rock, 4.3m high, lies about 0.7 mile SE of Gamoda Misaki, and is illuminated by an auxiliary light on the headland.

Tsubakidomari Ura, a long inlet, lies N of the promontory terminating in Gamado Misaki. Maiko-jima, 85m high at its E end, lies in the entrance to the inlet, about 1 mile NW of Gamoda Misaki. The inlet affords good anchorage to small vessels with local knowledge, in depths of over 10.1m. The better entrance to the inlet lies W of Maiko-jima; there are reefs on either side of this entrance.

Tachibana Ko (33˚52'N., 134˚40'E.)

World Port Index No. 61965

6.7 Tachibana Ko lies near the head of Tachibana Ura; it is sheltered by Gamoda Misaki and I shima from SE winds and seas during the typhoon season (August to October), and sheltered from the W to NW winds of winter by the surrounding hills. Being a natural, well-sheltered harbor, it has developed into an industrial port, with an electric power station and other industries.

Winds—Weather.—Throughout the year, the most common wind direction is NW to NE. Storms are most frequent when there are N winds, followed by S winds.

When a typhoon is proceeding E along the S coast of Shikoku, caution is necessary as considerable E to SE swells enter the harbor.

Depths—Limitations.—The draft limitation in the channel is officially 10.5m, although there have been reportsit may be under 10m. The pier, on the S side of the reclaimed area, has a depth of 11m alongside and can accommodate vessels up to 30,000 dwt. It can accommodate vessels up to 200m in length. A dolphin jetty, on the NE side of the reclaimed area, has depths of 7.3m alongside, and can accommodate a 5,000 grt vessel.

Aspect.—Tachibana Ura has many islets and groups of rocks in its entrance. **Funo Iso** (33˚53'N., 134˚43'E.), on the N side of the entrance, consists of two rocks, 1.2m high; a light is shown from the N rock. Ao Shima, about 2 miles NNE of Funo Iso, is saddle-shaped; it is 55m high in its NE part and is marked by a light on a hill in its SW part. Nakatsu Shima and

Table of Contents

Maru Shima lie about 0.5 mile S and 1 mile SSW, respectively, of Ao Shima.

Hadake Shima, a rock, 7.9m high, lies about 1.4 miles SSE of Funo Iso, on the S side of the entrance to Tachibana Ura; it should not be approached closely due to dangerous rocks extending about 0.5 mile from it. Tobi Shima, 30m high, about 0.5 mile S of Hadake Shima, is joined by reefs to Nono-jima, about 0.4 mile farther SSW.

Takasaki Yama, 81m high, flat-topped and covered with trees, lies about 1.3 miles W of Funo Iso; Urume Shima, 46m high to the tops of the trees, lies about 2 miles SW of Funo Iso.

Taka Shima, 84m high, and Kokatsu Shima, 76m high in its N part, lie about 0.5 mile and 1.5 miles W, respectively, of Urume Shima.

Okonai Yama, 138m high, lies at the head of the harbor, about 1.5 miles W of the N end of Kokatsu Shima.

The electric power station on the NE side of the reclaimed area has a conspicuous chimney, 202m high, painted red and white.

Pilotage.—Pilotage is not compulsory but recommended. Pilots are available off the entrance to Tachibana Ura during daylight. Vessels usually anchor at Shimotsu, where the authorities board and grant free pratique.

Anchorage.—Good anchorage, except during NE winds, can be taken, in 10.5m, mud, good holding ground, about midway between Taka Shima, Naga Shima, and Kokatsu Shima.

Directions.—From the N, approach with Urume Shima bearing 223˚ until Funo Iso Light is in line with Takasaki Yama, bearing 270˚, when course is altered 242˚, steering for the summit of Kokatsu Shima. When Urume Shima is abeam, bearing 152˚, alter course to 262˚ and thereafter steer as required to enter the harbor.

From the E, approach with Funo Iso Light bearing 270˚ and in line with Takasaki Yama. When Ao Shima is abeam bearing N, alter course to 242˚ and enter the harbor as previously directed.

Tachibana Ura to Komatsushima Wan

6.8 **Ao Shima** (33˚55'N., 134˚43'E.), previously described in paragraph 6.7, lies close E of the entrance to Naka Gawa. Mitsu Ishi, a rock, 7m high, lies about 0.3 mile E of Ao Shima, near the outer end of islets and reefs fronting the river entrance.

Tomioka Ko (33˚55'N., 134˚42'E.) lies at the mouth of Naka Gawa. A wharf on the S side of the river has depths of 3.5 to 5m alongside. Passage between the islets and the coast requires local knowledge.

A large chimney, 95m high and painted white, is conspicuous from a distance on the S side of Tomioka Ko.

Depths of less than 10.1m extend nearly 1 mile offshore between the mouth of Naka Gawa and Wadano Hana, about 6 miles NW.

Pilotage.—The pilot for Tomioka Ko boards at **Komatsushima Ko** (34˚02'N., 134˚37'E.).

Wadano Hana (34˚00'N., 134˚38'E.), a low, flat, wooded projection, is fringed by shoal water extending up to 0.1 mile offshore. Near the N extremity of Wadano Hana, a light is shown. Another light is shown on the coast about 3 miles SE. The silo of an animal feed factory, about 0.8 mile S of Wadano Hana, is the most conspicuous object in the vicinity.

Caution.—Okame Iso, a group of rocks, which dries 0.9m, lies about 1.8 miles N of Wadano Hana; a light is shown from its central part.

Okino Se, isolated rocks, with a least depth of 3.1m, lies about 1.8 miles ENE of Okame Iso; it is marked by breakers when there is any swell.

Komatsushima Ko (34˚00'N., 134˚36'E.)

World Port Index No. 61960

6.9 Komatsushima Ko lies between Wadano Hana and O Saki, about 2.3 miles NW. The principal harbor facilities consist of an area sheltered by breakwaters in the W part of the harbor, and Kanaiso Wharf and New Kanaiso Wharf in the S part of the harbor. Fairways, marked by buoys, lead between E and S breakwaters to the inner harbor, and to the wharves in the S part of the harbor. The tidal rise is 1.6m at MHWS.

Depths—Limitations.—A berth, on the W side of the inner harbor, is 170m in length and can accommodate vessels of 15,000 grt, with a draft of 8.5m.

Kanaiso Wharf and Kanaiso New Wharf can accommodate vessels of 15,000 and 20,000 grt, respectively, with drafts up to 8.5m. Kanaiso Wharf is 170m long; Kanaiso New Wharf is 200m long.

Aspect.—A white six-storied building is conspicuous about 0.3 mile WSW of the S breakwater head.

Nei Hana, with a red-colored cliff close N, lies about 1.7 miles WNW of Wadano Hana. Komatsushima Ko Light is shown from the summit of a hill, 92m high to the tops of the trees, about 0.3 mile W of Nei Hana. Shiba Yama rises to an elevation of 191m, about 0.7 mile NW of Nei Hana.

Kigisu Iwa, a group of four rocks, lies on a shoal about 0.3 mile NNE of Nei Hana; shoal water extends about 0.1 mile E of the highest rock, which is 11.9m high.

Pilotage.—Pilotage is not compulsory. Pilots are available and will normally board about 0.8 mile NW of Wadano Hana Light; in bad weather, they will board off the lighted buoys situated about 1.3 miles W of Wadano Hana. For free pratique, vessels usually anchor in Mutsure or Shimotsu to board the authorities. Pilots can be contacted on VHF channels 16 and 12.

Anchorage.—Good anchorage can be taken in Komatsushima Ko, in 7.3 to 11m, mud, good holding ground.

Directions.—After rounding Wadano Hana, vessels bound for the breakwater harbor should steer for the lighted buoys moored about 1.3 miles W of Wadano Hana, then steer for the fairway entrance, while vessels bound for Kanaiso Wharves should steer for the lighted buoys moored about 1 mile SW of Wadano Hana and proceed through the fairway.

Caution.—Inside the breakwaters it is considered safe except from NE winds and seas, but the anchorage is dangerous when there are heavy seas from SE. There is particular danger when the harbor is in the right hand semicircle of a typhoon. In such circumstances it is advisable to anchor SW of Wadano Hano, in 7 to 7.9m, good holding ground; caution is advised to avoid the seaweed cultivating grounds along the shore.

Tokushima Ko

6.10 Tokushima Ko (34˚03'N., 134˚37'E.) lies just N of Komatsushima Ko, and is located at the mouth of the Shinmachi Kawa. The river provides access to the town of Tokushima. Tsuda Outer Breakwater extends from the N side of the river entrance, which is also sheltered by a detached breakwater. A light is shown on each end of Tsuda Outer Breakwater and on the head of the N breakwater. Another light is shown from the wharf, 150m SW of the N breakwater head.

Entry is prohibited into an area extending 1 mile N and NE of the N breakwater, where a large area of reclamation is taking place. Lighted buoys are moored 0.3 mile NE and 0.2 mile NW, respectively, of the N end of Tsuda Outer Breakwater. There are extensive seaweed beds on the N side of the river mouth, and timber ponds S of the river mouth.

Depths—Limitations.—The entrance to the river has been dredged to 4 to 5.8m. There are wharves, with depths of 4.5 to 5.5m alongside, in the harbor.

Aspect.—Tsudo Yama, a hill, 78m high, is conspicuous about 1.3 miles W of the river entrance.

Bi San, 280m high, with two radio towers and a pagoda on its summit, is conspicuous about 3 miles WNW of the river entrance; the pagoda is illuminated at night.

Yoshino Gawa (34˚04'N., 134˚38'E.), one of the four mouths of Yoshino Kawa, the largest river in Shikoku, enters the sea N of Tokushima Ko. The coast between Yoshina Gawa and Oiso Saki, about 7 miles NNE, is low, fringed by pine trees, and backed by the delta of Yoshina Kawa. Depths of less than 10.1m extend up to 1 mile off this coast.

Naruto Kaikyo

6.11 Naruto Kaikyo (34˚14'N., 134˚39'E.), connecting the NW part of Kii Suido to Harima Nada, is better avoided by large vessels and vessels without local knowledge. The strait is narrow, the tidal currents are very strong and their directions complicated, and there is heavy traffic.

Tides—Currents.—In Naruto Kaikyo, the N current flows from about 2.5 hours after LW (HW) until about 2.5 hours after HW (LW) at Fukura. The strongest currents appear in areas N of a line joining Tobi Shima and To Saki during a N current. During a S current, rates tend to increase after passing a line joining Mago Zaki and To Saki.

Aspect.—The narrowest part of the strait is about 0.8 mile wide between Mago Zaki, the NE extremity of Oge Shima, and Kado Saki (To Saki), the SW extremity of Awaji Shima. Naka Se, E of the center of this part of the strait, divides it into O Naruto, the W channel, and Ko Naruto, the E channel. O Naruto is about 0.3 mile wide, but due to the whirlpools and tide rips on either side, its navigable width is only about 0.1 mile. Ko Naruto is only navigable by small craft.

Caution.—A dangerous wreck lies approximately 0.4 mile WNW of Kado Saki Light.

A bridge, with a vertical clearance of 40m, spans the strait.

6.12 Oiso Saki (34˚11'N., 134˚39'E.), on the W side of the S entrance to Naruto Kaikyo, is marked by a light at the E point of a line of hills extending about 1 mile W. Bora Yama, 59m high and conical, lies close SW of the light structure. Thick pine trees extend about 1 mile W from Bora Yama. Okame Iso, a detached shoal, with rocks awash, lies about 0.4 mile E of Oiso Saki, and is marked by a beacon; an auxiliary light at Oiso Saki shows over Okame Iso.

Caution.—An obstruction, marked by a lighted buoy (port hand) and a fish haven, lie 0.4 mile NNW and 0.5 mile N, respectively, of Oiso Saki.

Muyano Seto, entered N of Oiso Saki, separates Oge Shima from Shikoku. Due to shoals in both entrances, and tidal currents which attain velocities up to 5 knots, passage can only be made by small vessels with local knowledge.

Oge Shima, on the W side of Naruto Kaikyo, is mostly wooded; its E coast consists of a succession of sandy beaches broken by black, rocky headlands. The coast is protected by a line of detached breakwaters lying close to and parallel to the shoreline.

Tomi Yama, 80m high, conical, with trees on its summit, lies at the S end of Oge Shima, about 1 mile WNW of Oiso Saki. Nodamaru, 203m high, about 1 mile NNW of Tomi Yama, and Shishimaino Take, 163m high, about 1 mile farther N, are conspicuous.

Mago Zaki, thickly wooded and marked by a light, is the N extremity of Oge Shima. Hadaka Shima, a rocky, wooded islet, 23m high, lies about 0.2 mile SE of Mago Zaki, to which it is joined by a reef. A shoal, with a depth of 2.7m, lies about 160m E of Hadaka Shima.

Tobi Shima, a rocky, wooded islet, 36m high, lies about 0.5 mile SE of Mago Zaki; it is bordered by rocks and shoals extending about 140m offshore. Nakano Se, a detached rock, with a depth of 6.8m, lies about 0.7 mile SSW of Tobi Shima.

Omoi Zaki, about 1.7 miles WNW of Mago Zaki, lies on the W side of the N approach to Naruto Kaikyo. Kanekakematsuno Mori, 168m high, with a wooded summit, is conspicuous about 0.4 mile SW of Omoi Zaki.

6.13 Shio Saki (34˚11'N., 134˚44'E.), the SW extremity of Awaji Shima, is a grassy conical point with a range of hills extending E; it lies on the E side of the S approach to Naruto Kaikyo. Depths of less than 10.1m extend about 0.2 mile S and 0.4 mile W of the point. A light is shown from a white tower, 0.7 mile E of Shio Saki. Taka Zone and Chika Zone, with depths of 11.8m and 10.9m, respectively, lie nearly 0.7 mile WSW of Shio Saki; there is a heavy sea over them in bad weather.

Akaiwa Hae, a rock, with a depth of 4.9m, lies about 1 mile NW of Shio Saki.

Kourano Hana lies about 2.3 miles NW of Shio Saki; Mizutani Yama, with twin peaks, 142m and 123m high, lies close N of Kourano Hana. A light is shown from a pierhead, 0.7 mile N of Kourano Hana.

Tsurushima Hana (34˚14'N., 134˚42'E.), the N entrance point of Fukura Ura, lies about 1.5 miles N of Kourano Hana. Gyoja Yama, 97m high, lies close NE of the point, and drying rocks extend about 0.1 mile SW of the point.

Anchorage.—Fukura Ura provides good anchorage for large vessels, in about 12.8m, mud and sand, about 0.4 mile S of Kemuri Shima, which lies about 0.5 mile NE of Tsurushima Hana. The anchorage is exposed to W winds, but heavy seas are seldom experienced.

Okikarimo Shima, about 0.5 mile W of Tsurushima Hana, is 38m high, with drying rocks extending about 0.1 mile SSE of it. Fish havens are situated 0.4 mile W and 183m SW of the N extremity of Okikarimo Shima.

6.14 Kado Saki (To Saki) (34˚14'N., 134˚40'E.) is the extremity of a high, narrow, cliffy projection extending about 0.8 mile SW from the coast of Awaji Shima. A light is shown from a summit near the SW end of the headland, and close NE of the light structure is a red and white tower about 120m high. A pointed rock, 7m high, lies on a rocky bank extending about 135m WSW of the point.

Naka Se, about 0.2 mile WSW of Kado Saki, consists of rocks up to 1.8m high, and extends about 0.2 mile in a NNE-SSW direction; Hitotsu Bae, a rock awash, lies close S of Naka Se, with a 4.6m depth about 90m farther SW.

Yoroi Zaki, a cliffy point, lies about 1.8 miles N of Kado Saki.

Directions.—All vessels, other than small craft, should use O Naruto. Vessels should proceed in mid-channel on a course of 352˚ and 172˚, after ascertaining from a distance of at least 1 mile where the main current is, and whether there are vessels bound in the opposite direction.

Naka Se should first be recognized, and then navigation should not be difficult as the route is straight, and there is little danger of submerged rocks provided the tidal current is not strong and traffic is not heavy. When a vessel is proceeding against the current and another vessel is approaching from the opposite direction, the vessel proceeding against the current should wait until the other vessel is clear of the strait. Caution is also necessary due to excursion boats and ferries crossing the channel.

According to experience gained during a 15 day period in winter by a vessel with a speed of 8 to 8.5 knots, passage could be made at any time with a following current. With an opposing tidal current, passage is possible at any time for 3 days at neaps, for 1 hour on either side of the turn of the tide for a 3 day period at springs, and on other days for 1 to 3 hours after the time of the strongest tidal current.

When a 2,700 grt vessel proceeded from N to S, 20 minutes before the turn of the tide at the end of the N current, the vessel reported that response to the helm decreased somewhat in the middle of the strait and the vessel was set a little towards Hadake Shima. When this vessel proceeded from S to N, about 10 minutes before the turn of the tide at the end of the S current, there were no whirlpools, or tide rips, and the water was calm, but being the time of the turn of the tide, there were many small vessels making passage and fishing vessels had gathered in the vicinity of Naka Se.

Caution.—The passage should be avoided by large vessels, vessels without local knowledge, and in the following circumstances:

1. Around the time of strongest tidal current.
2. At night or in poor visibility.
3. In bad weather.
4. When the tidal current is opposed to a strong wind from the opposite direction, especially when there is a strong S wind in summer. In such circumstances, Naka Se may be obscured and the channel difficult to distinguish.

The S coast of Awaji Shima, from **Shio Saki** (34˚11'N., 134˚44'E.) to Oishi Saki, about 12 miles ENE, is bordered by flat-topped hills, 500 to 600m high; from a distance, this coast appears as a high level ridge. Yuzuruha Yama attains an elevation of 609m, about 5 miles NE of Shio Saki and 1 mile inland. Kashiwara Yama attains an elevation of 570m about 3 miles WNW of Oishi Saki. This coast is steep-to, with depths of less than 10.1m, less than 0.5 mile offshore.

Nu Shima Light

Nu Shima, 118m high and thickly wooded, lies about 1.5 miles offshore, about 4.5 miles ESE of Shio Saki; there are no dangers more than 0.25 mile offshore. A light is shown from the E side of the island. A harbor, protected by two breakwaters, lies on the NW coast of Nu Shima. A light is shown on the head of each breakwater.

Tomogashima Suido

6.15 Tomogashima Suido, the S entrance to Osaka Wan, lies between the SE extremity of Awaji Shima and the coast N of Takura Saki. It is divided into three channels, Yura Seto, Nakano Seto, and Kadano Seto by Okino Shima and Jino Shima. Tomoga Shima is the collective name for Okino Shima and Jino Shima. Yura Seto is the W and main channel.

Aspect.—Oishi Saki (34˚16'N., 134˚57'E.), the SE end of Awaji Shima, is a well-wooded, cliffy headland. A light is shown from its summit; the light structure and white building

Oishi Saki Light

are conspicuous. The headland slopes gradually N to low land planted with rows of pine trees.

Naruyama Shima, forming the W side of Yura Seto, lies close N of Oishi Saki, from which it is separated by the S entrance to Yura Ko. The island is long and narrow, and except for its N end, is a low sand and gravel spit with scattered trees. A light is shown from its S end, and there is a hotel on a small hill at its N end. Shoal water extends about 0.5 mile E of Naruyama Shima; a light is shown on this shoal area about 0.4 mile E of Naruyama Shima.

Yuro Seto has a navigable width of about 1.5 miles, with depths of over 20m.

Okino Shima, on the E side of Yuro Seto, is densely wooded, and rises to an elevation of 119m near its W end; a light is shown from the W end of Okino Shima. Tora Shima, an islet, lies at the E end of Okino Shima, to which it is connected by a causeway.

Nakano Seto, between Tora Shima and Jino Shima, close E, is very narrow and obstructed by reefs.

Jino Shima, 94m high and densely wooded, is marked at its E end by a light.

Kadano Seto, between Jino Shima and the coast N of Takura Saki, has a navigable width of about 500m, in depths of over 20m. A fish haven lies near the midpoint of the narrowest part of the channel; several more lie in the SW approach.

Pilotage.—Pilotage in the voluntary traffic separation scheme is recommended. Pilots should board about 6.5 miles S of the W end of Okino Shima. It was reported that the pilot station has been moved to a position 2 miles due S of Oishino Hana, on which there is a light.

The following information should be transmitted 24 hours in advance to Tomogashima Channel Pilot Service:

1. **Northbound vessels.—**Vessel's name, grt, deepest draft, ETA at Tomogashima Pilot Station, last port of call, destination, and vessel's agent. Amendments to the ETA should be passed to Bay Pilot Kobe and a listening watch set on Kobe Port Radio VHF when within range.

Oishino Hana Light

2. **Southbound vessels.—**Vessel's name, grt, deepest draft, name of berth from which vessel will sail and estimated time of departure or ETA at Wada Misaki, and destination.

Regulations.—Vessels navigating Yura Seto should keep to the starboard side of the channel and not less than 145m distant from the meridian of 134˚59'E. when between the parallels of 34˚15.7'N, and 34˚17.7'N. This is part of a voluntary traffic separation scheme

Northbound vessels transiring through Osaka Wan and vessels approaching Yura Seto from N should leave **Sumoto-Oki Lighted Buoy** (34˚21.1'N., 135˚00.7'E.) to port.

Osaka Wan

6.16 Osaka Wan (34˚30'N., 135˚10'E.), at the E end of the Naikai, is free from off-lying dangers, but there are many sunken wrecks.

Kansai International Airport (34˚26'N., 135˚14'E.), oriented NE-SW, is centered 3 miles off the SE shore of the bay; it is surrounded by a prohibited entry area about 0.3 mile wide. Low-flying aircraft approach sectors extend 1.5 miles NE and SW from the extremities of the airport. An approach tower stands 0.25 mile offshore at each end of the runway; a light is shown from each tower. A bridge, with a vertical clearance of 25m, connects the E corner of the airport island to the main-

Table of Contents

land SE. Vessels transiting the area are advised to give the airport a wide berth.

Awaji Shima, forming the W side of the bay, is mountainous with hills extending to the coast, which is steep-to and provides few anchorages. The E shore of the bay opens out to a plain with hills in the distance; the N half is an industrial zone, and the S half consists of sandy beaches backed by pine woods. Open anchorage can be taken in all parts of the E side of the bay. The inner end of the bay is an industrial area, and in addition to the important harbors of Osaka and Kobe, there is an almost continuous line of harbors; there is extremely heavy traffic of all types of vessels, large and small, foreign and domestic. In general, during typhoons, it is safer for large vessels to seek shelter outside the harbors to avoid being driven ashore, or danger of collision and grounding due to exceptional tides. Recommendations for taking refuge will be transmitted. Vessels taking refuge are requested to report their anchoring positions to the Kobe Port Captain as soon as possible, using the section numbers on the mesh chart. See graphic in paragraph 6.19 for details. A continuous radio watch should be kept for information concerning the typhoon, and schedule and procedure for port reentry. Since the Port Captain will not direct the sequence of vessels having taken refuge from designated anchorages, vessels should return to the same anchorages after the port re-entry vessels have returned to port.

Vessels carrying dangerous cargo as designated by the Maritime Traffic Safety Law shall, when navigating in Osaka Wan, provide a fire wire and auxiliary rope on the bow and stern which fulfill the following requirements:

1. The towing rope shall be a wire rope with an eye in the end, strong enough to tow the vessel concerned. A sufficient length of it to reach down to the water surface shall be coiled on the vessel.
2. The auxiliary rope shall be strong enough to lead out the above-mentioned wire rope to the water surface. It shall have an eye at the end, and it shall be lowered down over the side as far as possible without interfering with the safety of navigation.

6.17 Yura Ko (34˚17'N., 134˚57'E.), on the W side of Tomoga-shima Suido, is enclosed on its E side by Naruyama Shima, which was previously described in paragraph 6.15. It is a good anchorage for small vessels, and is calm except with strong N and SSE winds. There are N and S entrances to the harbor; the N entrance is about 90m wide, with depths of about 4m. There are depths of 6.4 to 9.2m in the main part of the harbor.

Imakawa Kuchi, the S entrance to Yura Ko, lies close W of Taka Saki, which is the S extremity of Naruyama Shima; Taka Saki is marked by a light. It is only suitable for small craft. An overhead power cable, with a vertical clearance 14m, spans SW of Taka Saki.

The E coast of Awaji Shima, from Yura Ko to U Zaki, about 17 miles NNE, has depths of over 20m from about 0.2 to 0.5 mile offshore.

Sumoto Ko (34˚21'N., 134˚54'E.) (World Port Index No. 61930), about 3.5 miles NW of Yura Ko, consists of an outer harbor and an inner harbor, sheltered by breakwaters; it lies close SE of the mouth of Sumoto Kawa. The outer harbor has depths of less than 4.9m. The wharf in the NW part of the outer harbor has depths of 4 to 4.6m alongside. A detached breakwater, extending NW-SE, has been constructed close NE of the entrance to the outer harbor.

Taka Saki Light

Sen San, 448m high, is somewhat conspicuous about 3 miles WNW of Sumoto Ko. A chimney, 32m high, is conspicuous about 0.4 mile WSW of the outer harbor entrance.

Tsuna Ko consists of the area from Sioda, about 4 miles N of Sumoto Ko, to Sano, about 4 miles farther NE. It has been reported that work was in progress to construct a large scale port between the area from Sioda and Sumoto Ko.

Myoken Yama, 519m high, about 2 miles N of Sano, is somewhat conspicuous in the N part of Awaji Shima.

U Zaki (34˚35'N., 135˚02'E.) has remarkable red cliffs in its vicinity, and is fronted by an area of reclaimed land.

6.18 Fuke Ko (Huke Ko) (34˚19'N., 135˚08'E.) lies about 4 miles ENE of Kadano Seto, the E passage of Tomogashima Suido. The harbor consists of Tanagawa Hakuchi, consisting primarily of a reclaimed area, and Fuke Hakuchi, sheltered by breakwaters; a narrow man-made marina lies close W of Tanagawa Hakuchi.

Depths—Limitations.—A dolphin oil jetty, on the NE side of the reclaimed area, has depths of 8 to 8.5m alongside. An oil jetty, on the SE side of the reclaimed area, has depths of 8m alongside.

A wharf, about 198m long, with depths of 7m alongside, lies close SE of the reclaimed area.

Close E of the wharf, a spit, with depths of 1.2 to 4.3m, extends about 0.4 mile NNE from the shore, and is marked by a lighted buoy near its outer end.

Fuke Hakuchi has general depths of about 4m.

A rocky shoal, with a depth of 2.7m, lies nearly 0.5 mile N of the entrance to Fuke Hakuchi, and is marked W by a lighted buoy.

Aspect.—The chimney, 202m high and painted in red and white bands, of an electric power station, and tanks in the vicinity, are conspicuous on the reclaimed land. The chimney, 152m high, and painted in red and white bands, of another electric power station, is conspicuous about 0.35 mile farther SSE.

Naga Saki lies about 1 miles NE of Fuke Hakuchi; a white round tower lies about 0.4 mile E of the point.

In strong winds caution is necessary, as there may be a large number of vessels seeking shelter in the waters NW of the harbor.

Hannan Ko (34˚28'N., 135˚21'E.)

World Port Index No. 61935

6.19 Hannan Ko consists of the harbor areas fronting Izumi-Sano, Kaizuka, and Kishiwada (Kisiwada), and the Mokuzai lumber storage and timber ponds, respectively, from SW to NE. Industrial zones are being built in Kaizuka and Kishiwada, and construction of large wharves and breakwaters is underway off these cities. An area of prohibited entry, lighted around its perimeter by beacons, lies about 3 miles off Izumi-Sano.

Tides—Currents.—The tidal rise at Kishiwadi is 1.5m at springs, and 1.1m at neaps.

Depths—Limitations.—Izumi-Sano Fairway, entered about 1.5 miles N of the dredged harbor basin, leads to the basin at Izumi-Sano. It has depths of 11.6 to 13.4m, and is about 225m wide.

A berth, on the NE side of the entrance to the basin, has a depth of 11.9m alongside, and can accommodate a vessel up to 170m in length. A dolphin jetty on the SW side of the entrance has a depth of 12.5m alongside.

The dredged basin, off Tuda Kawa, has depths of 6.4m alongside the quay on its SW side.

Kishiwada Fairway is entered about 1 mile N of the entrance to the anchorage area lying S of the timber pond; it is about 220m wide, with depths of 10.8 to 14m, and with depths of 10.1m in the approach.

Mooring buoys in the anchorage area can accommodate vessels up to 20,000 dwt, in depths of 11 to 11.9m.

A berth close SE of the timber storage area has depths of 10.1m alongside.

Aspect.—An observation tower stands about 4 miles W of the dredged basin at Izumi-Sano. The chimney of a refinery is conspicuous S of the above-mentioned basin.

A radio tower, with an elevation of 86m, painted in red and white bands and marked by a red obstruction light, is conspicuous nearly 0.5 mile E of the mouth of Tuda Kawa; the tower of the Castle of Kishiwada, about 0.3 mile farther ENE, is also conspicuous.

A group of silver-colored oil tanks is conspicuous on the N side of the mouth of Ota Kawa, near the N limit of the harbor. An incinerator chimney is conspicuous at the N end of the timber pond area. Farther S, the chimney, 42m high, close SE of the joint harbor office, on the N side of the mouth of Haruka Kawa, is also conspicuous.

Lighted buoys mark the entrances to Izumi-Sano Fairway and Kishiwada Fairway.

Pilotage.—Pilotage is not compulsory. Pilots, when requested from Kobe, will board in the vicinity of the quarantine anchorage (34˚28'N., 135˚20'E.). For further information, see paragraph 6.1

Pilots can be contacted on VHF channels 16 and 12..

Caution.—A wreck, with a depth of 14.7m, lies 1.25 miles W of the quarantine anchorage.

A large detached area of reclaimed land is connected to the shore by two bridges on its SE side.

A breakwater extends NW and N from the N point of this area. A light is shown at its head.

Vessels should remain clear of the prohibited areas off Kaisuka and Kishiwada, where the off-lying detached breakwaters are under construction; the areas are marked by towers and lighted buoys, showing flashing orange lights.

Care is necessary in entering the anchorage area at Kishiwada, as there is a tendency to set towards the reclaimed land on the E side during strong W winds.

Sakai-Senboku Ku (34˚33'N., 135˚26'E.)

World Port Index No. 61547

6.20 Sakai-Senboku Ku is an important trading center, a cotton and wool center, and an industrial area for steel, oil, electricity, gas and petro-chemical products. There is heavy traffic of large vessels. Sakai-Senboku Ku consists, from S to N, of Otsu Minami Hakuchi, Otsu Hakuchi, Hamadera Passage, Hamadera Hakuchi, Nishi Hakuchi, Minami Hakuchi, and Kita Hakuchi.

Hamadera Passage, entered about 3.8 miles NW of the entrance to Otsu Kawa, leads to Hamadera Hakuchi, about 3.8 miles E.

Sakai South Passage, entered about 4 miles WNW of the entrance to Yamato Kawa, leads ESE to Nishi Hakuchi and Minami Hakuchi. Sakai North Passage extends midway along Sakai South Passage and leads to Kita Hakuchi, about 2 miles E.

Depths—Limitations.—Hamadera Passage is about 300m wide, with a dredged depth of 15.8m; lesser depths than charted have been reported.

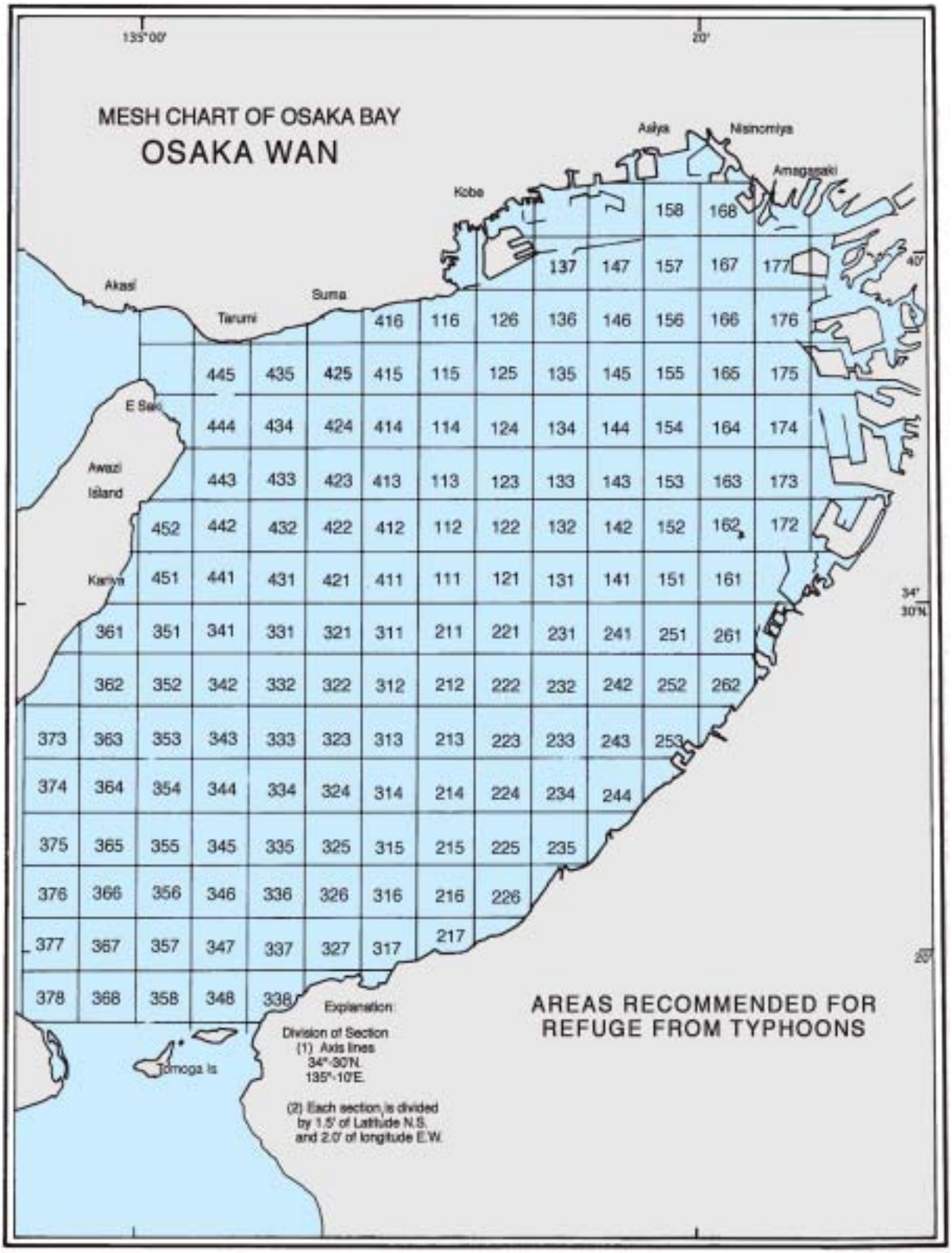
Sakai South Passage is about 0.2 mile wide, with dredged depths of 14m to its intersection with Sakai North Passage, then has depths of 9.2 to 10.4m farther ESE. Sakai North Passage has depths of 12.6 to 14.6m. The passage has a dredged depth of 14m as far as Lighted Buoy No. 5 and Lighted Buoy No. 6; lesser depths than charted have been reported E of these lighted buoys.

Quay No. 3 in Otsu Minami Hakuchi can accommodate 18,000 dwt vessels in a depth of 10.1m.

Otsu Hakuchi has jetties with depths of 5 to 15.7m alongside.

The Crude Oil Dolphin Jetty, N of the inner end of Hamadera Passage, has depths of 20 to 21m alongside, and can accommodate vessels up to 150,000 dwt.

Table of Contents



Return to paragraph: 6.16

Hamadera Hakuchi comprises Area No. 4, the central part of Sakai-Senboku Ku, and is entered between short breakwaters. A light is shown on the head of each breakwater.

The LNG Jetty, close SE of the inner end of Hamadera Passage, can accommodate vessels up to 64,600 dwt in depths of 14.9m. Farther S, a Crude Oil Jetty can accommodate vessels of 150,000 dwt in depths of 15.8 to 17.1m. Farther E, a fertilizer pier can accommodate vessels up to 66,000 dwt in depths of 14 to 18m.

Nishi Hakuchi has an oil jetty, on its W side, which can accommodate 20,000 dwt vessels, in depths of 11 to 11.5m. Dangerous cargo jetties, with depths of 7 to 8m alongside, lie in the SE part of Nishi Hakuchi.

A jetty on the W side of the entrance to Minami Hakuchi has depths of 10.6 to 11.2m alongside and can accommodate 20,000 dwt vessels. Ohama Quay, on the NE side of Minami Hakuchi, has depths of 10.1m alongside.

The S side of Kita Hakuchi can accommodate 80,000 dwt vessels in a depth of 14m.

Drydock No. 2, on the W side of Minami Hakuchi, is 380m long, 63m wide, with a depth of 12.5m, and can accommodate vessels up to 400,000 dwt.

Aspect.—Lighted buoys mark both sides of Hamadera Passage and Sakai South Passage.

The **Itsumi-Otsu Oshashi Bridge** (34˚31'N., 135˚24'E.), in the S part of the harbor, is a yellow single arch bridge, 14.9m high, marked by green lights at its center and red lights on either side.

Six black gas tanks, 47m high, are conspicuous on the S side of the inner end of Hamadera Passage. A chimney, 163m high, painted red and white, is conspicuous about 1 mile farther S; oil tanks, painted white, are conspicuous close SW.

Three gas tanks, painted white, are conspicuous about 0.3 mile N of the inner end of Hamadera Passage.

Six chimneys (34˚34'N., 135˚27'E.) of an electric generating station are conspicuous close W of the S end of Minami Hakuchi. The chimneys are in line E-W; the two W chimneys are 185m high and painted red and white.

Two conspicuous gas tanks, 108m high, stand close N of the NE corner of Kita Hakuti.

Pilotage.—Pilotage is compulsory for vessels over 10,000 grt and is available during daylight hours only. Pilots board, as follows:

1. Hamadera Fairway—Within a circle of radius 0.8 mile centered on a position 1 mile W of Hamadera Fairway Lighted Buoy No. 2.
2. Sakai South Fairway—Within a circle of radius 0.8 mile centered on a position 3.25 miles WSW of Osaka North Breakwater Light.
3. Kishiwada Fairway and Izumi-Sano Fairway—Off the fairway.

Regulations.—Communications concerning harbor operations can be made by radio or radiotelephone with the harbormaster, situated at the S end of Minami Hakuchi.

Signal stations for berthing and navigational information are situated on the N side of the inner end of Hamadera Passage, and near the inner end of Sakai South Passage. Vessels should retain onboard the most recent edition of Japan Maritime Safety Laws and Regulations, obtainable through the Japanese Coast Guard. This publication should be kept as a reference for signal station communications and their meanings, appropriate answering signals, and other local or specific regulations.

Vessels over 10,000 grt using Hamadera Passage should report in advance to the harbormaster their ETA at a position 1.5 miles W of the signal station.

Vessels over 3,000 grt using Sakai South Fairway should report in advance to the harbormaster their ETA at the entrance to that fairway.

Osaka Ko

Table of Contents

Anchorage.—The Quarantine Anchorage (34˚37'N., 135˚23'E.) lies SW of the entrance to Sakai South Passage.

Caution.—A prohibited area exists SW of Senboku Otsu South Breakwater.

Osaka Ko (34˚39'N., 135˚26'E.)

World Port Index No. 61550

6.21 Osaka Ko, one of the great harbors of Japan, lies in the NE part of Osaka Wan. The harbor extends N from the mouth of **Otsu Kawa** (Otu Kawa) (34˚30'N., 135˚23'E.), at the N harbor limit of Hannan Ko, to N of the mouth of **Shin-Yodo Kawa** (Sin-Yodo Kawa) (34˚41'N., 135˚24'E.), one of the lower reaches of Yodo Kawa. The harbor, from S to N, fronts the cities of Izumi-Otsu (Izumi-Otu), Takaishi (Takaisi), Sakai, and Osaka. The harbor is divided into Sakai-Senboku Ku and Osaka-Ku, from S to N, and will be described in that order.

Osaka Ku is the N harbor area of Osaka Ko. Naiko (Inner Harbor), consisting of Section I to Section IV, is enclosed by the entrance to North Breakwater and South Breakwater (34˚38'N., 135˚24'E.). South Harbor (Section V) is the area S of South Breakwater. North Harbor (Section VI) is the area on the N side of the E part of North Breakwater. Gaiko (Outer Harbor) is Section VII. A coastal industrial zone, with wharves for local and industrial traffic, is under construction in North Harbor and South Harbor. Gas, chemical, mineral, and steel factories, the foundation of Osaka's industry and economy, border the shores of the harbor.

Winds—Weather.—The wind is mostly W in the winter, and W and NE in summer. Throughout the year the most common wind is NE. In regard to wind velocity, the W winds are generally strong, and when there are sustained strong W winds in winter, these become large and make harbor operations difficult.

Fog is generated, on rare occasions in winter, from about sunrise to about 0900, but as it disperses in 2 or 3 hours, it presents no particular obstacle to navigation. It disperses with winds of over 8 knots.

Tides—Currents.—The mean tidal rise at Osaka is 1.4m at springs, and 1.1m at neaps.

In the NE part of Osaka Wan the current usually sets S and the ebb current becomes particularly strong, and caution is necessary when entering or leaving the harbor.

The tidal currents inside the breakwaters are generally weak, but at springs and after heavy rains the ebb current from the rivers can be fairly strong and there may be difficulty in securing to or departing from the berths and mooring buoys in the lower reaches of Aji Kawa and Shirinashi Kawa.

Depths—Limitations.—Inner Harbor Passage, entered about 0.7 mile WSW of N and S breakwater heads, has been dredged to a depth of 13m and has a width of 170 to 500m. Aji Kawa Passage (Azikawa Passage), continuing ENE to NW of the outer end of Center Wharf, has depths of about 11.9m. A bridge, with a vertical clearance of 45m, crosses Aji Kawa 0.7 mile from the river mouth.

Dolphin berths, close within the entrance to Inner Harbor, have depths of 10.1 to 11.9m.

Center Wharf has depths of 11m and 10.1m alongside its N and S sides, respectively.

Osaka Ko—North Wharf—Quay R

Osaka Ko—Central Container Terminal

Oil berths, about 0.5 mile W of Center Wharf, can accommodate vessels up to 30,000 dwt in depths of 11.9m.

Lumber piers, about 0.4 mile S of Center Wharf, can accommodate vessels up to 20,000 dwt in depths of 11.5 to 13m.

Container piers, farther SE in Section IV, have a depth of 11.9m alongside and can accommodate vessels up to 35,000 dwt.

There are numerous mooring buoys and dolphin berths in the harbor, with depths of 7.5 to 10.1m, that can accommodate vessels up to 10,000 grt.

Osaka Ko—Cruise Terminal

Osaka Ko—East Container Terminal

Osaka Ko—North Container Terminal

South Harbor Fairway, dredged to 11.9m, is entered about 0.8 mile WNW of the head of South Breakwater. Lighted buoys mark the S side of the channel.

Quay L and Quay R, close within South Harbor, have depths alongside of 10 to 12m, respectively.

Quay J, farther S, on the N side of Sakai North Passage, can accommodate vessels up to 30,000 dwt in depths of 11.9m.

North Harbor can accommodate vessels up to 10,000 dwt, with a maximum length of 250m and a maximum draft of 11.6m.

The largest drydock is 193m long, 25m wide, with a depth of 8.1m; it can accommodate vessels up to 24,000 dwt.

A bridge, about 0.7 mile ENE of Center Wharf, has a vertical clearance of 49m over a distance of 208m.

Aspect.—Lighted buoys, moored about 0.7 mile WSW of the entrance to Inner Harbor, mark the entrance to Inner Harbor Passage.

Osaka Ko Radar Station, 51m high and painted red and white, is conspicuous at the W end of Center Wharf.

Gas tanks, painted white, with a chimney, 82m high, close NW, lie about 1 mile N of Center Wharf.

The bridge, about 0.7 mile ESE of Center Wharf, is marked by green lights at its center and red lights on each side.

A bridge spans North Harbor between North Port, on the W side, and Hokko Wharf, on the E side. The navigable channel is under the E part of the bridge and is indicated by bridge lights. There is a vertical clearance of 31m in the channel. A second bridge crosses the mouth of Shorenji Kawa. There is a vertical clearance of 28m under the N span and 31m under the S span.

The Ferry Wharf, at the inner end of South Harbor, is lighted by floodlights.

Pilotage.—Pilotage is not compulsory, but is recommended. Pilots can be obtained from "Hanshin Pilot" service with offices at Osaka and Kobe. Pilots board vessels requiring pilotage within a circle of radius 0.5 mile centered on a position 1.75 miles WSW of Osaka North Breakwater Light. For further information, see paragraph 6.1.

Osaka Ko Radar Station, at the W end of Center Wharf, broadcasts weather and maritime traffic bulletins at regular intervals. Upon request, a vessel's position, movements of other vessels, and conditions inside the harbor, will be broadcast for vessels up to 1,000 grt within about 4 miles, and for vessels over 1,000 grt within about 8 miles.

Regulations.—The harbormaster may be contacted by radio and radiotelephone regarding harbor operations. The harbor office can be contacted 24 hours by radiotelephone on VHF channels 12, 16, 19, and 20 for tugs, water, line-handling, pilotage, and quarantine assistance.

Vessels over 500 grt, intending to enter or leave the harbor, should notify the harbormaster of the ETA at the W end of the fairway, or the time of departure by 1200 of the day preceding the arrival or departure. Any change in ETA should be reported to the harbormaster.

Signal stations which display anchorage and berthing signals are situated as follows:

1. At the head of N breakwater.
2. At Aji Kawa, about 0.5 mile NE of Center Wharf.
3. At Kizu Kawa, about 1.8 miles SE of Center Wharf.
4. In **South Harbor** (34˚37.1'N., 135˚25.5'E.).

Table of Contents

Vessels should retain onboard the most recent edition of Japan Maritime Safety Laws and Regulations, obtainable through the Japanese Coast Guard. This publication should be kept as a reference for signal station communiques and their meanings, appropriate answering signals, and other local or specific regulations.

Traffic through Naiko and Aji Kawa Fairways is controlled by the signal flashing letter "C," indicating that large vessels are docking or leaving Tempozan Wharf, Ajikawaguchi Wharf, Sakurajima Wharf, or Umemachi Wharf, and all other vessels must clear the fairways.

The following regulations are in effect in the entrance fairway to South Harbor:

1. Vessels must navigate in accordance with the signals shown from South Harbor Signal Station. (See accompanying table below.)
2. Vessels entering or leaving the fairway must remain clear of vessels in the fairway.
3. Vessels must not navigate abreast each other in the fairway.
4. Vessels meeting other vessels in the fairway must navigate on the right side of the fairway.
5. Vessels may not overtake other vessels in the fairway.

6.22 On the N side of Osaka Wan are the important harbors of Kobe and Amagasaki. The coast E of **Hachibuse Yama** (Hatibuse Yama) (34˚38'N., 135˚06'E.) is backed by a range of mountains extending NE.

Rokko San (34˚46'N., 135˚16'E.), about 12 miles NE of Hachibuse Yama, is the highest peak in this range, and attains an elevation of 932m, with a hotel and other buildings on its summit. Kabuto Yama, 309m high, is conspicuous about 3.25 miles E of Rokko San; it is isolated, thickly covered with pine trees, very dark in appearance, and shaped like a Japanese helmet. East and SE of Kabuto Yama, there is an extensive plain.

Amagasaki Ko (34˚41'N., 135˚23'E.)

World Port Index No. 61555

6.23 Amagasaki Ko (Amagasaki Nishinomiya) (Ashiya Ko) lies in the NE part of Osaka Wan, between Osaka Ko and Kobe Ko. Amagasaki Ko, which includes Nishinomiya Ko and Ashiya Ko, is divided into three districts. Section No. 1 is an industrial harbor servicing the Hanshin belt of heavy industry. Section No. 2 lies on the W side of the harbor, adjacent to the E part of Kobe Ko, and is primarily a yacht harbor. Section No. 3 describes the area S of Nishinomaya Breakwater, although there are no harbor facilities.

Amagasaki City is an industrial city which has developed in the deltas of Muko Kawa and Kanzaki Kawa, and on the reclaimed land along their frontage. The ground here is low and marshy and as a result, bottom cave-ins or sinkholes are not unusual.

South Breakwater, which is detached, lies across the entrance to the harbor. The area extending 0.3 mile S from the breakwater has been reclaimed and works are in progress. Entry is prohibited extending NE of South Breakwater to the SW tip of Higashi Kaigan. The area is marked by lighted beacons.

The harbor is entered between the W end of South Breakwater and the promontory of reclaimed land lying SW of West Breakwater. A light is shown on the head of West Breakwater. The two fairways which branch off from this area have general depths of over 10.1m, but caution is necessary as the passages become narrow and the water is shallow on either side.

Osaka Ku—South Harbor Signal Station—Traffic Signals

Day	Night	Meaning
A flashing white light every 2 seconds, or a black cone, point up.	A flashing white light every 2 seconds.	Vessels may enter harbor. Vessels under 500 grt may leave harbor, but vessels over 500 grt must stop and wait.
A flashing red light every 2 seconds, or a black square.	A flashing red light every 2 seconds.	Vessels may leave harbor. Vessels under 500 grt may enter harbor, but vessels over 500 grt must stop and wait.
A flashing red light and a flashing white every 3 seconds, or two black cones, points together.	A flashing red light and a flashing white light every 3 seconds.	Vessels over 5,000 grt entering the harbor must keep out of the path of vessels leaving the harbor and wait outside of the fairway. Vessels over 5,000 grt leaving the harbor must stop and wait. Vessels of less than 5,000 grt may enter and leave the harbor.
3 flashing red lights and 3 flashing white lights every 6 seconds, or two black cones, points together and a red square flag, displayed vertically.	3 flashing red lights and 3 flashing white lights every 6 seconds.	Vessels other than those specified by the harbormaster may neither enter or leave the harbor.

Winds—Weather.—At Amagasaki, the most frequent winds are from the NNE, NE, and W, respectively. Winds are from the NW to NE more than 50 per cent of the time. Seasonally, W to NE winds are frequent in winter, N to NE winds in spring and autumn, and SW to W winds in summer.

Depths—Limitations.—Ohgimachi Pier (Kobe Steel), about 0.3 mile WSW of No. 3 Power Plant, has depths of 12m alongside, and can accommodate vessels up to 35,000 dwt, with a maximum length of 220m.

Berth 1, Berth 2, and Berth 3, on the left bank of the mouth of Syoge Kawa, can accommodate vessels of 10,000 dwt, in a depth of 10.1m.

The oil berth at the mouth of Nakasima Kawa, on the right bank, has depths of 10.5 to 11m alongside. The dolphin berth, close NW, has depths of 11.5 to 11.9m alongside.

No. 1 Lock, leading to the inner part of the dikes, is 80m long and 12.5m wide, and has a depth of about 4.5m. No. 2 Lock, 62m long and 11.9m wide, has a depth of 4m.

Section No. 2, which fronts the city of Nishinomaya, has general depths of 4 to 7.3m.

Aspect.—The chimney of **No. 3 Power Plant** (34˚41'N., 135˚23'E.) at Amagasaki is conspicuous; it is 152m high, of composite shape, and painted red and white. Six chimneys, each 66m high, are situated about 0.2 mile farther NNE.

A gas tank, 97m high and painted black, and a chimney, 94m high, painted red and white, and with a mobile crane in the vicinity, are conspicuous about 1 mile N and 0.3 mile WNW, respectively, of No. 3 Power Plant Chimney.

Lighted buoys mark the entrance channel to Amagasaki Ko; the channel is approximately 200m wide and is entered about 2 miles SW of South Breakwater.

Kabuto Yama, previously described in paragraph 6.22 is conspicuous about 3 miles N of Nishinomiya Ko.

Four spherical gas tanks are conspicuous about 0.3 mile NE of the mouth of Higashi Kawa, at Nishinomiya.

Pilotage.—Pilotage in Amagasaki Ko is compulsory for vessels over 10,000 grt. Pilots board within a circle of radius 0.3 mile centered on a position 0.5 mile SW of Amagasaki Lighted Buoy No. 2. For further information, see paragraph 6.1

Caution.—When vessels over 5,000 grt enter Amagasaki Ko and berth alongside they normally request two or more tugs from Osaka or Kobe.

Kobe Ko (34˚40'N., 135˚13'E.)

World Port Index No. 61560

6.24 Kobe Ko occupies the N part of Osaka Wan. The harbor is divided into Section I to Section VI; further, there are Fairway I to Fairway III, and the Higashi-Kobe Fairway.

Kobe Ko is a domestic and international trade center, and being enclosed N by mountains, is protected from the winter Northwest Monsoons. The harbor is well-protected and has numerous berthing facilities. There is sufficient depth in the anchorage, where the bottom is sand, mixed with clay, good holding ground.

Port Island, in the central part of the harbor, has piers for the exclusive use of container vessels, and for use by scheduled shipping services. A restricted area has been established off the south central portion of Port Island; entry is prohibited.

There is a development project in progress which includes the expansion of Rokko Island to the S and Kobe Airport, which will be located S of Port Island. The scheduled completion date is sometime in 2005.

Winds—Weather

Throughout the year at Kobe, the most common wind is N, followed by W to NW, but the velocity of the wind is not particularly strong. From summer through autumn, except with the onset of an extremely strong typhoon, there are hardly any occasions when the working of cargo is completely impossible due to wind and seas.

Tides—Currents

The mean tidal rise at Kobe is 1.4m at springs, and 1.1m at neaps.

The diurnal tidal irregularities are rather large, and on several days per month there is only one tidal cycle per day. At such times, the tidal currents are also irregular; at the time of LW the tidal current is N, and at HW it is S, with a maximum velocity of about 0.5 knot.

Depths—Limitations

The maximum draft allowed in each of the fairways is, as follows:

1. 8.7m in Fairway I.
2. 11.8m in Fairway II.
3. 11.4m in Fairway III.

A tanker dolphin berth, on the SW side of Port Island, has depths of 11.9 to 12.5m alongside, and can accommodate vessels up to 11m draft and 70,000 dwt.

There are two offshore pipeline berths about 2 miles WSW of Wada Misaki. Vessels up to 70,000 dwt, with a maximum length of 250m and a maximum draft of 12.7m, can be accommodated at the W berth. Vessels with a maximum length of 236m and a maximum draft of 10.7m can be accommodated at the E berth.

Rokko Island, an artificial rectangular-shaped island, extends 2 miles E of Nadahama Channel into Section VI; numerous berths are situated on each side of the island. Two bridges span the passage between the island and the industrial areas N. The W bridge, Rokko-Ohashi, has a vertical clearance of 14m; the E bridge has a vertical clearance of 28m.

Port Island is an artificial triangular-shaped island to the W of Rokko Island. It is connected to the N by the Kobe-Ohashi Bridge, which has a vertical clearance of 14m. Several other bridges and tunnels are in the works.

Maya Wharf is an island berth, connected to the mainland to the N by the Nadahama-Ohashi Bridge, which spans from the NE corner of the complex to No. 1 Industrial District and has a vertical clearance of 27m. The Daini Maya-Ohashi Bridge connects Maya Wharf to Shinko Higashi Wharf, to the W, and has a vertical clearance of 18m.

A number of dolphin berths lie on the N side of No. 5 Breakwater.

Table of Contents

The largest drydock is 301.5m long and 43.7m wide; it can accommodate vessels up to 85,000 dwt.

Kobe Ko—Large Vessel Private Wharves			
Wharf	Length	Depth	No. of Berths
Eastern No. 1	1,506m	9.5-13m	5
Eastern No. 2	561m	9-12.5m	6
Eastern No. 3	932m	6-12.5m	8
Eastern No. 4	314m	5-12.5m	3
Nada	100m	9.8m	1
Mitsui Pier	362m	10m	2
Kawasaki HI	806m	7-9m	7
Mitsubishi HI	2,712m	6-9m	12
Western No. 1	845m	5-12m	10

Aspect

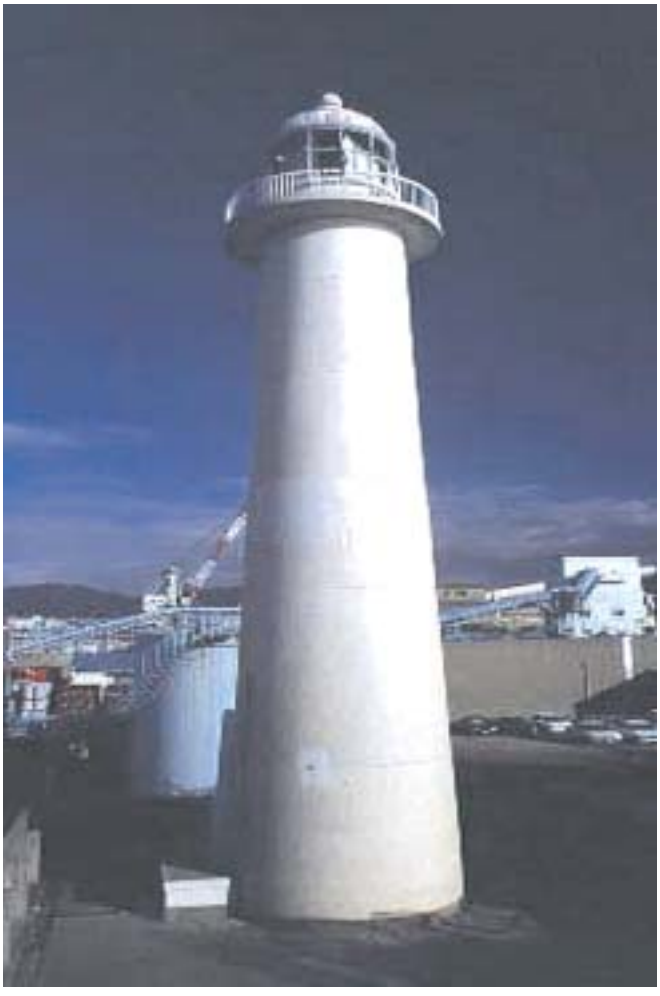
Fairway I runs from between Wada Breakwater and No. 1 Breakwater to the vicinity of Central Wharf. Fairway II runs between Breakwater No. 1 and Breakwater No. 2, then W of Port Island to Shinko Pier 2 and Shinko Pier 3. Fairway III runs along the NE side of Port Island. Higashi-Kobe Fairway runs between Industrial Area No. 3 and Industrial Area No. 4 Industrial; Higashi Fairway joins this passage to Ferry Wharf, farther N. Fairway III runs SE from Breakwater No. 6 and Breakwater No. 7. The channel, extending from the N entrance of Fairway III to the berths at Kobe Steelworks, is commonly called Nada-hama Channel, which is marked by lights in line bearing 358˚.

Kobe Ko Light (34˚39'N., 135˚10'E.), about 1 mile W of Wada Misaki, and close E of Karuma Shima, is shown from a white cylindrical concrete tower, 29m high, and serves as a good head mark when approaching Kobe Ko from the S. Wada Misaki Signal Station, about 0.3 mile E of Kobe Ko Light, is 36m high, with a white building.

Kobe Ko Range Lights are shown from white beacons near the SW side of Port Island. When in line they bear 095.5˚ and lead toward the SE entrance of Fairway II.

Eight cranes, each painted red, are conspicuous on the W side of Port Island.

Port Tower, on Central Wharf, about 1 mile NW of Port Island, is a red drum-shaped structure, 103m high, and floodlit.



Kobe Ko Light

The **Portopia Hotel** (34˚39.7'N., 135˚13.0'E.) is a prominent white building, 122m high, having the elliptical shape of a vessel's funnel.

A Ferris wheel, reported to be fully illuminated and conspicuous, is easily identified standing 0.3 mile SE of the hotel.

A white chimney, 100m high, is prominent on the S side of Port Island; a short distance W are three large and two small oil tanks painted white.

Kobe Ko—Large Vessel Public Wharves					
Wharf	Usage	Quay	Length	Depth	No. of Berths
Eastern	Domestic trade	West (A through E)	440m	5.5m	5
		East (Q through U)	500m	6m	5
		Northeast. (J through P)	625m	5.5m	7
		North (F through I)	360m	5.5m	4

Kobe Ko—Large Vessel Public Wharves					
Wharf	**Usage**	**Quay**	**Length**	**Depth**	**No. of Berths**
Higashi—Kobe	Ferry terminal	No. 1	100m	5.5m	1
		No. 2	130m	6m	1
		No. 3	165m	7.5m	1
		No. 4	130m	6m	1
Hyogo	—	North (A through E)	654m	7.2m	5
		East (F and G)	422m	9m	2
		South (H)	214m	9m	1
		East (I)	259m	9m	1
		South (J and K)	261m	7.5m	2
Hyogo-ko Ichibamae	—	—	282m	4.5m	5
Maya	—	West (A through C)	610m	10-12m	3
		South (D through H)	1,320m	12m	5
		East (I through J)	664m	12m	2
Nada	—	—	162m	7.3m	1
Naka Pier	—	West (B through E)	456m	5.5-9m	4
		South (End)	114m	9m	1
		East (A)	223m	9m	1
Port Island	Container	C1 through C5	1,450m	12m	5
		C7 through C9	900m	12m	3
	Liner	L1 through L3	600m	10m	3
		L4 through L15	2,400m	10m	12
	Chemical	—	210m	10m	1
	—	A Jetty	183m	7.5m	1
	—	D	300m	12m	1
	Tramper	E through G	700m	12m	3
Port Island—2nd Stage	Container	C14 through C17	1,750m	15m	5
	Domestic trade	—	130m	7.5m	1
Rokko Island	Container	C1 through C7	2,800m	13-14m	8
		D through I	1,110m	10m	6
		J through M	740m	10m	4
	Ferry	F1, F2, F3	600m	7.5-9m	3
	Tramper	P, Q, S through Z	1,945m	10-12m	10
	Liner	L1, L2, L2	800m	13-14m	3
	Domestic trade	A, B, S-A, S-C, N, O	862m	7.5m	6
	Other	C, S-B	460m	10-13m	2
Shinko - Pier 1	—	West (A through C)	366m	9.1m	2
		East (D through F)	356m	9.1m	2
		South (End)	105m	9.1m	1

Table of Contents

Kobe Ko—Large Vessel Public Wharves					
Wharf	**Usage**	**Quay**	**Length**	**Depth**	**No. of Berths**
Shinko—Pier 2	—	West (G, H)	356m	9.1m	2
		East (I, J)	354m	9.1m	2
		South (End)	105m	9.1m	1
Shinko—Pier 3	Ferry	West (K L)	352m	9.1m	2
	—	East (M N)	372m	10-10.9m	2
	—	South (End)	105m	9.1m	1
Shinko—Pier 4	—	West (O1 ,O2, P)	589m	10-12m	3
		East (Q1, Q2, R)	649m	10-12m	3
Shinko—Higashi	—	West (S, T)	439m	10m	2
		South (U through X)	1,167m	7.5-12m	6
		East (Y, Z)	354m	10m	2
Suma Harbor	—	East	90m	5.5m	1
	—	South	180m	5.5m	2
Takahama	—	—	282m	5.5-6m	2

A light is shown at an elevation of 57m from a black tower on the Oriental Hotel, nearly 0.5 mile NE of the Port Tower. A telegraphic office radio tower, 96m high, painted red and white, is in the vicinity.

The Trade Center Building, 118m high and marked by a red obstruction light, is conspicuous about 0.4 mile further E.

Kobe Tower

Three chimneys, 120, 100, and 63m high, and painted red and white, are conspicuous in Industrial District II.

A chimney, 63m high, is conspicuous in the SW part of Industrial District III.

Kobe—No. 7 Breakwater East Light

Pilotage

Pilotage is compulsory in Section I, Section II, Section V, and Section VI in the areas enclosed by breakwaters and for vessels over 300 grt. Pilots are available normally only during daylight. For night entry, the pilot should be embarked before 2000 and have passed the breakwater by 2100. Container and ro-ro vessels for immediate loading may berth with special

Kobe— Rokko Island Ferry Terminal

Kobe—Port Island

permission up to 2359. Pilotage is available 24 hours for vessel's leaving the harbor. The vessel's ETA and other information should be signaled 24 hours before arrival. Pilots board in the Quarantine Anchorage or its vicinity. Offices of the Hanshin Pilots and the Inland Sea Pilots are situated at Kobe.

The harbormaster may be contacted by radio or radiotelephone regarding harbor operations. Signals regarding berthing or anchoring are shown from the signal stations at Pier 5, Wadamisaki, Higashi-Kobe, and Kobe Signal Station. Vessels should retain onboard the most recent edition of Japan Maritime Safety Laws and Regulations, obtainable through the Japanese Coast Guard. This publication should be kept as a reference for signal station communication and their meanings,

Kobe—Rokko Island

appropriate answering signals, and other local or specific regulations.

For further information, see paragraph 6.1.

Regulations

Tankers, when berthed in the harbor, must be given a berth of at least 30m to avoid accidents due to fire.

Vessels of 15,000 grt or more and oil tankers of 1,000 grt or more wishing to transit Fairway No. III should notify the Port Captain of their ETA and anticipated ETD by 1200 the day before the passage through the fairway.

The following navigational regulations are in force in Fairway No. III in order to insure the safety of maritime traffic.

1. Vessels may not let go their anchor in the channel, nor may they release vessels being towed. However, these regulations do not apply when attempting to avoid an accident, when not under command, or when engaged in assisting a vessel which has encountered a sudden danger, or when saving life.
2. Vessels entering or leaving the fairway must keep out of the way of vessels navigating in the fairway.
3. Vessels must not navigate abreast each other in the fairway.
4. Vessels should navigate, as far as practicable, in that portion of the fairway which lies on the right side of the center of the fairway.
5. Vessels may not overtake other vessels in the fairway unless there is room to pass safely.

As a general rule, Fairway No. II and Fairway No. III are not to be used by vessels of less than 1,000 grt. Traffic control is in force in Higashi-Kobe Fairway for vessels over 500 grt in order to avoid danger of collision. Vessels must navigate in accordance with the signals shown from the signal station on the E side of the passage.

Table of Contents

Signals

Vessels must navigate in accordance with the signals shown from the signal station on the E side of the passage. The signals and their meanings shown from Higashi-Kobe Signal Station are the same as those shown from the South Harbor Signal Station in Osaka Ko. The table in paragraph 6.22 describes these signals and their meanings.

Vessels over 500 grt must display the following signasl from the forecastle upon getting underway until passing through the breakwater entrance in the indicated passage:

Kobe Ko—Vessels Signals for Getting Underway	
Fairway	**Signal**
I	No. 1 under First substitute.
II	No. 2 under First substitute.
III	No. 3 under First substitute.

Traffic signals are shown from Kobe Signal Station situated at the root of Breakwater No. 6, from signal boards facing 035˚, 125˚, 195˚, and 320˚. The signals and their meanings are given in the acccompanying table:

Kobe Ko—Traffic Signals—Kobe Signal Station	
Signal	**Meaning**
Flashing letter "I"	Vessels are permitted to enter the harbor through Fairway No. III. Vessels of 500 grt or more intending to leave the harbor should stop and wait.
Flashing letter "O"	Vessels are allowed to leave the harbor through Fairway No. III. Vessels of 500 grt or more intending to enter the harbor should stop and await permission.
Flashing letter "F"	Vessels of 15,000 grt or more and oil tankers of 1,000 grt or more intending to enter or leave Kobe Ko via Fairway No. III should stop and wait for permission to enter or leave. Vessels of less than 15,000 grt may enter or leave via the passage.
Alternating flashing letter "X" with letter "I," "O," or "F"	Signal will shortly change to flashing letter "I," "O," or "F." Vessels navigating through Fairway No. III may proceed. Vessels of less than 500 grt may enter or leave Kobe Ko. Vessels of 500 grt or more should wait outside the fairway, clear of all traffic.
Flashing letter "X"	Vessels not in the passage should keep clear of fairway traffic. Signal will soon change to fixed letter "X".
Fixed letter "X"	Vessels other than those under the direction of the Port Captain should stay well clear of Fairway No. III.

Anchorage

The Quarantine Anchorage is situated SW of Wada Misaki. Anchorages for vessels with dangerous cargo are designated in Section IV and Section VI. The bottom is mud, good holding ground.

Directions

Kobe Ko can be approached using the Rokko Mountains (the highest peak, Rokko San) as a landmark. Kobe Light, about 1 mile W of Wada Misaki, is a good landmark for vessels approaching from the S.

There are a considerable number of wrecks located outside the harbor.

The harbor is used by a large number of ferries and scheduled passenger services. The scheduled passenger services operating from Naka Pier in Section II use Fairway No. I and Fairway No. II, and the ferries operating from Higashi-Kobe Ferry Wharf use the Higashi-Kobe Fairway.

Kobe Ko Section No. 5 Range Lights, in line bearing 029.6˚, have been established at position 34˚39'N, 135˚13'E and position 34˚39'N, 135˚13'E.

Kobe Ko Approach Lighted Buoys have been established in position 34˚35.4'N, 135˚11.2'E and 34˚35.6'N, 135˚14.3'E.

Kobe Oki Lighted Buoy No. 1 (34˚35.2'N., 135˚11.4'E.) and Lighted Buoy No. 2 (34˚35.5N., 135˚14.5'E.) have been established S of Kobe Ko to mark safe water.

All vessels over 500 grt bound to and from an area between Kobe Ko E of Fairway No. II (34˚38.7'N., 135˚12.8'E.) and Osaka Ko N of Hamadera Fairway (34˚33.2'N., 135˚20.2'E.) should pass Kobe Oki Lighted Buoy No. 1 and Kobe Oki Lighted Buoy No. 2 on their port side. Westbound vessels should use caution while navigating the area due to the presence of working vessels and vessels at anchor in the area.

Caution

The following items should be considered during a typhoon:

1. When a typhoon passes W of Kobe, the water level during high tide is considerably higher.
2. Strong SE winds blow when a typhoon passes W of Kobe due to the topography, which has mountains lying NW while the harbor is open SE.
3. When a typhoon is advancing E, particularly from Shiona Misaki NE to Kumana Nada, the velocity of the wind increases, even though Kobe Ko is in the left semicircle of the typhoon, because of the winds blowing down from the Rokko Mountains behind.

The channel buoy lights and breakwater lights are difficult to see at night, as they are superimposed against the factory and city lights.

A large number of container ships and cargo vessels anchor inside Section No. IV, and a large number of ferries anchor S of Industrial Area No. 4.

Barges are in operation carrying rubble from the land reclamation at Port Island.

According to past experience, the handling of large vessels becomes difficult and tugs lose their usefulness with winds of 29 miles per hour. Damage occurs to moored vessels when the winds exceed 48 miles per hour.

For procedures for taking shelter, strict attention should be paid to the harbormaster's instructions and the typhoon bulletins. Large vessels should anchor outside the breakwaters or heave-to there with the use of the main engines. Small vessels generally anchor in an area least affected by the typhoon, and medium size vessels, ferries, etc. should find a similar place between the breakwaters and the coast. Vessels of 2,000 to 3,000 grt should anchor rather than remain secured to piers or buoys; it is recommended that they seek shelter in **Uchinoumi Ko** (34˚28'N., 134˚18'E.) in Shodo Shima.

Akashi Kaikyo

6.25 Akashi Kaikyo (Akasi Kaikyo) (34˚37'N., 135˚01'E.), connecting Osaka Wan and Harima Nada, is about 2 miles wide. The strait is deep and free from dangers, but the tidal currents are strong and in some places set across the fairway. A bridge, with a vertical clearance of 65m, spans Akashi Kaikyo at its narrowest part.

The Japanese authorities have established prohibited areas around the bridge towers. Caution is necessary as traffic is heavy and there are a large number of fishing vessels. Current navigational notices and warnings should be consulted.

The N side of the strait, in general, shoals gradually shoreward, with a few off-lying rocks. Westward of the W entrance there are depths of less than 10.1m extending up to 4 miles offshore. The S side of the strait is comparatively steep-to.

A traffic route, prescribed by the Maritime Safety Law, has been established in the strait.

Within Akashi Kaikyo Traffic Route all vessels should navigate in that portion of the traffic route which lies on the starboard side of the central line of the route.

Wrecks have been reported on the N and NE edges of the traffic route.

Tides—Currents.—The nature of the tides in Akashi Kaikyo is similar to that in Osaka Wan, but the diurnal inequalities are more marked, and in the second half of each month there is only one tide cycle per day. However, the diurnal inequalities in the tidal current are not very large, and even when there is only one tide cycle per day, there are two E currents and two W currents per day.

The main tidal current flows along the middle of the strait over about 35 per cent of its width. On the N side of the main stream, the tidal current gradually decreases as one approaches the shore and there is little difference in the time of tide compared with that of the main current in the center, but on the S side of the main stream tide rips are generated in places. There is a relatively large current velocity in the vicinity of Matsuho Saki, and the time of the tide is some 20 to 50 minutes earlier than in the center of the main current; further, in the area 1.3 miles ESE of Matsuho Saki, the tidal current turns at almost the same time as in the middle of the main current and its rate is about 1.4 times as much.

The maximum velocity at springs may reach 7 knots. Countercurrents are generated between Akashi and Karasaki Hana, in the vicinity of Hiro Iso, on the W side of Matsuho Saki, and on the N side of Iwaya. There is SW for 10 to 30 minutes.

In the central part of Akashi Kaikyo, the currents run to the W from about 3 hours after LW to about 3 hours after HW at Akashi, and to the E from about 3 hours after HW to about 3 hours after LW; the W currents are strongest about the time of HW, and the E currents are strongest about that of LW.

Aspect.—Hira Iso (34˚37'N., 135˚04'E.), on the N side of the E entrance to Akashi Kaikyo, lies about 0.4 mile offshore and is a rocky bank, with a depth of 1.5m. It is marked by a light shown from a black and red tower.

Hachibuse Yama, 246m high, is conspicuous about 2 miles ENE of Hira Iso; a white building, showing a white light, is on its summit. A fishing pier extends from the coast SE of Hachibuse Yama.

A blue, two-storied, hexagonal building is conspicuous on Karasaki Hana, about 1.5 miles WNW of Hira Iso. Yamado Iso, a rock, with a depth of 1m, lies about 0.5 mile farther WNW and about 0.1 mile offshore.

A spherical gas tank, painted silver and standing on a black tower, is conspicuous about 1 mile NW of Akashi Ko.

Semento Iso, rocks with depths of 1 to 1.9m, and marked on the W and E ends as well as the S side of this shoal, respectively, by lighted buoys, lie about 1 mile W of Akashi Ko. Shoal water, with depths of less than 4.9m, extends about 2.4 miles farther WSW; a rock, with a depth of 3.4m, lies midway along the S side of the shoal water.

Matsuho Saki (Matuho Saki), on the S side of Akashi Kaikyo, is the N extremity of Awaji Shima, and is low, sandy, and thickly wooded.

E Saki, a rounded point, marked by a light, lies about 0.5 mile WSW of Matsuho Saki; a shoal, with a depth of 4.6m, lies about 320m NE of the light structure. A conspicuous tower, 278m high, stands on a hillside, 0.5 mile SSW of E Saki Light. A hill, 305m high, with a steel tower on its summit, lies about 1 mile SSW of E Saki.

Pilotage.—Pilotage is compulsory for vessels of over 10,000 grt in Akashi Kaikyo and its approaches for about 3 miles SE and 5 miles W of the Akashi Kaikyo Traffic Route.

The MSA Headquarters has requested that the following vessels embark a pilot:

1. Vessels without local knowledge.
2. Vessels over 30,000 grt.
3. Oil tankers and vessels loaded with liquefied gas of over 10,000 grt.
4. Foreign vessels.

For further information, see paragraph 6.1.

Regulations.—Vessels loaded with dangerous cargoes as specified by the Maritime Traffic Safety Law (except for mammoth vessels) are not to enter the fairway should the visibility be less than 1 mile. Entry by mammoth vessels is limited in accordance with the directions of the fairway supervisor.

Table of Contents

Vessels of 10,000 grt or over are requested to report their ETA at Akashi Kaikyo to the Osaka Wan Traffic Advisory Service (call sign Osaka Martis) on VHF channel 16, at least 24 hours in advance. A 3 hour advanced notice is required for vessels over 3,000 grt but less than 10,000 grt.

Directions.—Vessels must navigate in accordance with the traffic methods laid down in the Maritime Traffic Safety Law. See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Vessels over 5,000 grt should navigate in accordance with the following procedures:

1. Vessels intending to enter the traffic route should head for it in such a way as to pass Point A (34˚34.8'N., 135˚05.1'E.) on their port bow. Point A is located 2 miles from Akashi Kaikyo Fairway Lighted Buoy No. 3, on the extended center line of the fairway.
2. Vessels leaving the fairway and heading for Kobe Ko or Osaka Ko areas should alter course after passing Point A on their port bow in order to keep out of the path of vessels entering the traffic route.
3. Vessels intending to enter the traffic route from the Himeji Ko or Higashi-Harima Ko areas should head for it in such a way as to pass Point B (34˚36.3'N., 134˚56.9'E.). Point B is 2 miles from Akashi Kaikyo Fairway Lighted Buoy No. 1, on the line joining this buoy and Harima Nada Fairway Lighted Buoy No. 6.

Caution.—At night, the glare of lights at Akashi may make it difficult to distinguish the navigation lights of other vessels.

A large number of westbound vessels from the Osaka Ko and Kobe Ko areas and Tomogashima Suido meet with E-tbound vessels from the Harima Nada areas and Harima Nada North Fairway.

Table of Contents